THE SCHOOL REVIEW
A JOURNAL OF SECONDARY EDUCATION

VOLUME XXI NOVEMBER 1913 NUMBER 9

DO TOO MANY STUDENTS FAIL?

C. R. ROUNDS
H. B. KINGSBURY
West Division High School, Milwaukee, Wisconsin

There was a time, and that well within the memory of most of us, when the teacher in whose classes a comparatively low percentage of pupils passed was considered good on the basis of this fact alone. He was given the name of being a man of high standards and rigorous requirements. Conversely, the teacher, 90 per cent of whose pupils passed, at once laid himself under the suspicion of being lax, easy, and tender-hearted to a fault.

In recent years a new view has come to be taken by the profession generally. No longer does the teacher whose pupils fail in large numbers enjoy, on account of that fact alone, a reputation for thoroughness and strength. This change is in nowise due to a relaxation in educational demands, but simply to the persistent and ever-recurring inquiry: "Why must so many pupils fail? Is it not possible that many of these failing pupils might have succeeded had they been given sufficient encouragement and individual care and help?"

It is further being pointed out that the criterion, "The larger the percentage of failures, the higher the standard," is an exceedingly dangerous one; for this method of measurement really puts a premium upon poor teaching; it encourages obscurity and abstruseness; it offers absolutely no incentive to the active, alert, conscientious teacher who is warmed by a constant desire that his pupils

should succeed and grow and learn; it holds out no inducement to a teacher to take freely of his time in order to explain things to the backward students, or to seek to understand the sources of their difficulties. On the other hand, the teacher who is possessed of the new ideals says to himself and his class: "Here are the things we must accomplish during the term. We shall all work together for their accomplishment. I am here to help you and not to puzzle you. If we work hard together we shall succeed."

At this point it should be noted that the high school presents a set of conditions where it is peculiarly necessary that the pupil be encouraged to remain. Many parents are making sacrifices to keep their boys in school. In such cases the boy himself probably feels the call to be out and earn something. Besides, he is at a period of life when failure is least easily borne, and when the discipline of adversity is most severe and least bearable. He is at the climax, the turning-point, of his early youth. Encouragement may send him on; discouragement may send him back. It is essential that the teacher should recognize his responsibility in all these peculiar relationships, and that he should be an active force in saving and helping, and not an inert mass, or worse, in the way of educational progress of the youth. If the student is a girl, the foregoing conditions, and added ones, obtain. During her high-school years her physical organization undergoes a trying and dangerous change, fraught with peril and full of portent. Many days she is in school when by all rules of health she should be almost anywhere else instead. No doubt many girls have left school, ill or discouraged, because of the lack of a kind word, or a bit of sympathetic counsel at just the right time.

The report of the Commissioner of Education for 1909–10 (the latest report giving these particular data) shows that in the public high schools reporting, there were 662,189 pupils studying mathematics, and 844,031 studying English. The increasing importance of the high-school problem is partly indicated by the fact that, whereas in 1889–90 there were 2,526 public, and 1,632 private, high schools, enrolling a total of 367,003 pupils, in 1909–10 there were 10,213 public, and 1,781 private, high schools, enrolling a total of 1,032,461 pupils, an increase of 208 per cent in high-school enrol-

ment as against a 47 per cent increase in population during the same period of time. All these facts show the increasing demand for secondary-school training. Business and professional men, laborers and manufacturers, all are sending their children to the high school. These schools, once exclusive, are fast becoming universal.

Since this largely patronized high school is comparatively new, we are only beginning to realize its possibilities. We are in the midst of a readjustment of the curriculum to the vital needs of the pupils. We are beginning to see that the high school is not a "poor man's college." It is not a college at all. Its pupils are but children when they enter, and they have not yet passed the period of adolescence in their later high-school years. They must not be treated as responsible adults are treated, but must be watched and tended. Their way must, to a considerable degree, be made plain. While they must not be left unacquainted with hard work, they should be furnished with a proper amount of straw for their bricks. High-school men are now recognizing the fact that the schools are losing too many of their pupils, and that too many are being compelled to take work over. We are beginning to see that the large percentage of failing and "left" pupils is an argument for those who contend that our high schools are a poor financial investment. We are beginning to see that we must cease eliminating and retarding so many of our pupils, and that we must bend our efforts toward the elimination of the causes of their poor work and discouragement.

Some of the causes of elimination and retardation are: illness, various physical defects, dulness, indifference, need of pupil's aid in supporting the family, and so forth. At first it may appear that these causes are beyond the teacher's control, yet in the case of illness, for example, is it not true that a word of warning to the student might have prevented the attack of cold or grippe? Or, in the case of withdrawal to help support the family, how many parents might have been induced to leave their children in school if they could have been shown how the education their children were receiving was going to be of practical help in their everyday lives and that at no distant time? Dulness, indifference, lack of attention may all be thought, at first glance, to be things that may

be laid at the pupil's own door. Yet how many times may a teacher, by personal inquiry, ascertain the facts which are at the base of this indifference! How often will personal interviews discover little misunderstandings of work previously gone over—misunderstandings that never would have come to light in the routine of the classroom, but which have been in the way of successful work!

Let us suppose that by extra personal effort—by visits to a few homes of failing students, by quiet talks, by face-to-face exhortation—each teacher were to make it possible for one more student to remain in school one more full year. Allowing forty teachers for a school of a thousand pupils, this extra effort would mean that 4 per cent more pupils, or forty in each thousand, would be held under the influence of the high school for an extra year. When we consider the possibilities with reference to the total number of high schools and high-school pupils in the country, our 4 per cent becomes 45,259. The increased value of these young people to their communities as a result of this added year in high school, and the increased enrichment of their own lives, should make us consider even more carefully our high-school problems.

During the past year we conducted a questionnaire, the purpose of which was to throw light on the problem of retardation and elimination, particularly in the studies of English and mathematics, in our high schools. We addressed our inquiries to over three hundred high-school principals in all parts of the United States, and received about sixty replies which were more or less complete.

A summary of the data obtained based on figures from 46 high schools, reveals, among others, the following facts: In these schools, during a given semester, a total of 33,276 pupils were studying English, and 24,404 were studying mathematics. Of the total enrolment in English, 27,101, or 81.44 per cent, passed, and of the total enrolment in mathematics, 18,364, or 75.25 per cent, passed.

Of these 46 schools, 18 had less than 400 pupils enrolled in English. Taking these as one group, we find 4,096 enrolled in English, of whom 82.10 per cent passed; in mathematics, 3,684 were enrolled, of whom 75.55 per cent passed. Another group, made up of those schools whose enrolment in English was over

800, presents the following figures: Total enrolment in English, 21,003; total passing, 16,932, or 80.62 per cent. In mathematics, total enrolment, 14,683; total passing, 10,972, or 74.72 per cent. The third group of schools, those whose total enrolment in English was between 400 and 800, shows a total enrolment in English of 8,177; passed, 6,806, or 83.23 per cent; in mathematics, enrolment, 6,037; passed, 4,572, or 75.73 per cent.

The figures for these groups are interesting in many ways, but their main bearing upon our problem is the light they throw upon the questions: "What has the size of the high school to do with the percentage of those passing? Does not the large school tend to lose a larger percentage of its pupils?" So far as our figures may be given any weight, they seem to point to the following facts: (1) There is not a great deal of difference between the large and small high schools in the matter of the successful passing of pupils; in English this difference amounts to but 1.48 per cent, and in mathematics but 1.83 per cent. (2) But while, both in English and in mathematics, the very large schools show the smallest percentage passing, in English it is the group of middle-sized schools, and in mathematics the group of smallest schools that make the best showing. (3) It is pertinent to note here that the large schools vary among themselves to a truly startling degree with respect to the percentage of those passing. The lowest percentage in English in this group is 69.0 per cent and the highest 89.7 per cent, a difference of 20.7 per cent, or 207 pupils in each 1,000! Further, this percentage of 89.7 is made in a school that enrols 1,275 pupils in English. In mathematics the figures are still more startling. The lowest percentage in mathematics in any school of this group is 59.5 per cent, and the highest is 83.8 per cent, a difference of 24.3 per cent, or 243 in each 1,000 students! The largest enrolment any school shows in mathematics is 2,019; in this school 77.6 per cent of the students in mathematics pass, which is 2.35 per cent above the average for mathematics in all the other schools. (4) Not only do the schools in this group vary greatly, but the same school may show striking facts when its records in different subjects are compared. One large western high school passes 84.8 per cent in English, and but 72.5 per cent in mathematics. Two other large

schools pass 89.4 per cent and 86.3 per cent respectively in English, and 74.3 per cent and 71.6 per cent respectively in mathematics. Thus both of these schools are above the average in English, and below it in mathematics. On the other hand, one far-western school is 4.9 per cent below the average in English, and 4.1 per cent above it in mathematics. (5) Though the middle-sized schools show the largest passing percentage in English, they vary among themselves even more strikingly than do the larger schools. The lowest passing percentage here is 54.9, and the highest is 94.1, the enrolment being 619 and 723 respectively. The difference in percentage here is 39.2 per cent, or 392 pupils in 1,000.

To summarize these data, then, with regard to the influence of the size of the school upon the percentage passing, what slight difference there is appears to be against the largest schools; but the variations among the different schools of the same group, and the variations among different studies in the same school, are so great, and the high percentages obtained in *some* schools of *each* group, all show that size itself is far from the main factor in determining efficiency: indeed, that it comes near to being a negligible factor.

There is a further question with a very direct bearing upon the one just discussed. It is: In which group of schools does the proportionately largest number of students drop out? We approached this question with the notion that the answer would be: "The largest schools, of course." But whether because of better truancy laws in larger cities, or better organization of the faculties in the matter of delinquency reports, or more efficient clerical forces to aid in holding absent and tardy students to account—at any rate there is not much difference between the showing of the small schools and that of the large ones. In English, the small schools lose 7.32 per cent, the middle group, 7.77 per cent, and the large schools, 8.59 per cent; in mathematics, the poorest showing is made by the middle group—10.7 per cent—while the small schools lose 7.46 per cent, and the large ones, 7.73 per cent. Again in this matter, the wide variation among the different schools of the same group shows that other factors than the size of the school must be held mainly responsible for the numbers who leave before examination.

At this point we should like to call attention to some facts that have puzzled us: (1) We have reports from four southern schools, which show the following percentages as passing in English: 69.0, 65.0, 91.7, and 54.9; and in mathematics: 59.5, 60.1, 49.2, and 57.9 respectively. Why are these figures so low? We do not know. Their average passing percentages, based on their total enrolments in English and mathematics, respectively, are but 66.52, and 58.44. (2) Why should a great school of the Middle West drop to 75.4 per cent in English, and come up to 77.6 per cent in mathematics? It has 2,019 students in mathematics, and 2,640 in English. The school is studying the problems of retardation and elimination, and yet the results do not appear. These points show some of the surprises that are in store for him who would investigate a problem of such wide reaches and various ramifications.

Coming to the question of the relative frequency of failures in the various subjects of the curriculum, we find some interesting facts. Mathematics maintains its reputation as a high-school bugbear by presenting the lowest passing percentage in 25 out of 46 schools from which complete reports were received, and by being the only one out of all the subjects failing to be highest in at least one school.

Perhaps, because of this reputation of the subject, the teacher is too frequently content to say that the cause of the large mortality in mathematics is lack of mental ability. The data we obtained do not bear out this conclusion. We asked the question: "Do you find that proportionately more students lack mental ability in mathematics than in English?" The answers were: Yes, 25; No, 21. "Than in foreign languages?" Yes, 23; No, 27. "Than in science?" Yes, 19; No, 25. "Than in history?" Yes, 27; No, 19. It would seem that the principal trouble in mathematics is not a general lack of mathematical ability on the part of the student. We believe rather that it is the greater dependence of each lesson upon those preceding. For example, if the pupil misses or fails to understand fully the work in lowest common multiple, he has trouble in addition and subtraction of fractions and in the solution of fractional equations.

That much of the above difficulty can be overcome is shown by the following facts taken from reports received. In schools employing at least one of the special methods for minimizing retardation, described elsewhere in this paper, there was a total of 9,771 students taking mathematics, with 7,587, or 77.6 per cent, passing, while in schools not employing such special methods there was a total of 9,164 pupils taking mathematics, 6,608, or 72.1 per cent, of whom passed. It cannot be definitely stated that the difference in number of pupils passing was due to the special effort; it could be due in part at least to other causes, but the figures are very significant. Again, out of the 28 high schools having an enrolment of over 400 in English 15 have a passing percentage in mathematics above the average passing percentage of all schools sending data. Of these 13 employ one or more of the special methods referred to above, while but few of the schools with low passing percentages employ such methods.

Two other interesting facts appeared which may help in the analysis of the causes of large numbers of failures: (1) Some schools show a wide divergence as between different subjects: for example, Cleveland, Elgin, Schenectady, Portland (Me.), and many others. (2) Aside from mathematics, each subject makes the best showing in some schools, and the poorest showing in others. These facts indicate unmistakably that if any particular school finds that a regularly low percentage of its students is passing in any of its subjects the situation is a cause for investigation; for the experience of these 46 schools shows that it is possible for relatively high percentages of students in good schools to pass any subject in the curriculum. Conversely, they show that even in the so-called "easier" subjects, and in Junior and Senior elective work, where we may expect a measurable degree of enthusiasm and earnestness on the part of the students, it is possible to have a relatively large number of failures. In other words, whatever may be true of the general standard of any school or of the relative ease or difficulty of the various subjects, one factor must constantly be brought into the reckoning, and that is the teacher behind the desk.

This brings us to the vital part of our inquiry. We have seen that in English the experience of these schools has been that of

each 1,000 pupils who entered only 814 passed the subject successfully, 82 dropping out before reaching the examination, and 104 failing in the examination. In mathematics only 753 of the 1,000 passed, 84 dropping out during the term, and 163 failing in the examination. Further, we have seen that in some schools numbers failing and dropping out were nothing less than startling; and we have found schools, on the other hand, which, we have every reason to believe, are maintaining a high degree of excellence, but in which a gratifyingly large percentage of students pass. We have seen that figures will not warrant us in explaining this set of facts on superficial grounds; that the varying degree of difficulty in the different subjects does not account for more than a small part of these facts; that the teacher seems to be the principal determining element, and that he must be the one to look to if we are to increase the efficiency of our schools. What, then, are the teachers in these schools of high efficiency doing to prevent their students from failing and leaving school? And what are they doing with pupils who have already shown weakness?

The first question we asked on this latter point was this: Do you have special classes for those who have failed? Of those who replied, 6 said yes and 36 said no. Of the 6, 2 have tried the other plan (that of scattering repeaters through other classes); and of the 36, 17 have tried the plan of repeater classes, and have discontinued it. Among the reasons given for separate classes are these: (1) Other classes are not held back by slow or indifferent pupils. (2) The work can be better suited to the needs of the slow pupils. (3) In English, where students have knowledge of literature read, but cannot write, they are enabled to read different selections. The principal arguments against failure classes are: (1) Failure classes lack any standard of excellence. (2) There is no incentive for effort, no enthusiasm. (3) Repeaters know some part of their subject-matter well, and in general classes they are able to excel in these parts—an opportunity which they highly appreciate. (4) Failure classes have a stigma attached to them. (5) Discipline is difficult in such classes.

Two principals point out an important distinction in this matter: If a failure class can be small, they say, it may constitute the best

solution of the difficulty. The overwhelming sentiment of the replies received, however, is against segregation. The figures seem to indorse this judgment, so far as they have any bearing, for the schools with the high passing percentages are almost a unit in scattering their weak pupils. While two of the schools who segregate their failures make a good showing, one of the lowest more than offsets this average.

Besides the repeater class plan, the following devices are being successfully used: (1) special teachers, to give their whole time to weak pupils; (2) special periods of the day definitely set apart for this work; (3) teachers take turns in staying after school or in working extra hours with weak pupils; (4) immediate consultation with parents after one or two failures; (5) immediate consultation with pupil when he begins to get behind; (6) supplementary "make-up" classes.

Here are six specific policies, one or two, or all, of which are being employed by various schools to raise their standard of efficiency. As we study our tables and note the schools that are making a good showing in the success of their students, we find them, almost without exception, to be those that are making use of some of these specific plans. For instance—

Berkeley: We try not to let the pupil get far behind. Re-examination every week.

Lane Technical: Pupils who fail in two or more subjects any month are required to bring their parents. Two weeks from the giving-out of cards all pupils who failed are required to bring a statement of progress from teacher. If no improvement is shown, they must get the card signed at home.

Denver: Seventh-hour class.

Fort Wayne shuts the barn door before the horse gets out: Classes should not exceed 15 the first year, 20 the second, nor 25 anywhere. There should be a special teacher besides.

Evansville: Heads of departments have special coaching hours.

And so we might go on. Occasionally we find schools with high efficiency which do not indicate that they are employing any special plan. But the chief value of facts collected as ours are must lie, it seems to us, in their general trend. Individual instances of what may seem to constitute disquieting exceptions must always appear in large groups of facts like this. They may be due to in-

complete reports, or to clerical errors, or to abnormal conditions that happened to affect one semester or one study. They do not, it seems to us, invalidate the general conclusion that those schools that are taking a live and intelligent interest in their weak and backward pupils are getting results that justify their efforts.

Let us consider one more specific field of inquiry and that is the physical examination of failing pupils. To the query: "Do you make a physical examination of failing pupils?" 15 schools reply that they make such examination regularly; 7, that they make the test sometimes; 3, that they make no such test. The rest do not answer.

It seems to us that these replies indicate that our schools are not living up either to their duties or to their opportunities in this matter. True, as was pointed out by several of our correspondents, "that matter is taken care of in the grades." But that argument neglects the fact that many physical ills may overtake the student after he has left the grades. It ought not to be necessary to argue the matter here, it seems to us. Modern psychology and physiology have shown us too clearly the close interaction of body and mind; Hall's researches in the period of adolescence have set forth the dangers besetting youth in this period too plainly to permit us to seek excuse for laxity in this matter. A little wise counsel from a good physician might serve more effectively than many words of warning from a teacher, when it comes to keeping a young girl from being a young lady before her time through too many dances and too late hours. A physician's advice should be sought before a boy is allowed in athletics. At any rate, his judgment should be brought into the problem when there are headaches or colds or other "little" ills that are so frequently reported. And of course the eyes and ears should always be watched. Further, abnormality of sight or hearing should always be reported by the grade principal when the pupil enters the high school. Instances where we have been unjust toward a pupil who was failing simply because he could not see, or could not hear, are too fresh in the minds of all of us teachers to permit us to question the necessity for regular physical examination of failing pupils.

In conclusion, then, what shall we say of the efficiency of our

high schools? As at present administered, so far as we may judge by the 46 schools that make up our data, 18.56 per cent of our pupils in English do not pass successfully a given semester's work; in mathematics, the figures are 24.75 per cent. If these figures are representative (and we believe they are) and if the enrolment in our high schools in this year (1912–13) has reached 1,400,000, as it no doubt has done, judging by its past rate of increase and by the latest report of the United States Commissioner of Education; and if we assume that 1,150,000 pupils are studying English (a conservative assumption, since, according to the reports in which the matter is dealt with, 82 per cent of high-school pupils study English), then 213,440 of these pupils are due to fail each semester this year. And on the same basis, of the 900,000 pupils who entered upon the study of mathematics, 222,750 are due to fail. On the same basis, 94,445 are due to drop out of English each semester this year, without taking the examination, which, in English, usually means dropping out of school, for English is usually required; and 72,360 will drop out of mathematics.

In some of these cases, the best ends of all concerned—students, teachers, parents, and taxpayers—will best be served by dropping these students from the roll of the school. There can be no question that the ends of justice and wisdom will best be served by the failure of some of these pupils in examination and by the repeating of their work. A few are doomed to failure from the start. Inadequate preparation, ill-health, "chronic and insuperable aversion to all kinds of labor," as Irving would have put it, native slowness or ineptitude, all these factors must be figured into our account of the matter; but do these and all kindred factors account for the 222,000 and the 213,000? We cannot believe that they do. We must remember that at the start of a semester's work most of our pupils are well intentioned. They want to pass. They expect to pass. They plan on passing and are willing to work in order to pass. It is after the term is under way that the collar begins to gall the neck, and the heart begins to get weary, and the temper begins to be unstable. It is here, likewise, that weaknesses in health begin to tell. It is undoubtedly here in these early months that many, if not most, of the failures are prepared for. How wise, then, seems

the counsel of those principals who say: "Don't let them get far behind." "Call in their parents." "Get a statement from their teachers two weeks after failure report." "Have pupil and teacher talk the matter over privately, so that the pupil's point of view may be ascertained, and extenuating circumstances may be learned."

Just how many pupils there are who might be saved, and who ought to be saved, by such added vigilance, it is impossible to say. But it is patent that the number is astoundingly large. Our high schools must reach a higher degree of efficiency, or else they must recognize the fact that they are trying to do something that is out of harmony with the spirit of the age. It is not right that twenty or twenty-five out of each one hundred pupils who come to them for training should be pronounced failures at the end of a trial. It is not profitable from the standpoint of the taxpayers; it is not fair to students or parents; most important of all, it is not necessary, if proper precautionary measures are employed. In no phase of a teacher's work will a little extra effort, a little interest outside of routine work, pay larger dividends, than will effort right here with the faltering student.

CO-OPERATION OF ALL DEPARTMENTS IN THE TEACHING OF ENGLISH COMPOSITION[1]

JAMES FLEMING HOSIC
Head of the English Department, Chicago Normal College and Secretary of the National Council of Teachers of English

The subject of co-operation in the teaching of English composition is comparatively new, it is tremendously important, and it is one which English teachers cannot profitably discuss by themselves. In saying that the subject is new, I do not mean to imply that no experiments have been tried or that there is no record of them. On the contrary, there are several documents which the seeker after educational experience may consult. For example, the New England Association of Teachers of English has published from time to time accounts of the efforts of its members to solve what one writer calls the problem of "Successful Combination against the Inert." But as compared with the question of electives or vocational guidance, for example, the field is virgin soil.

I speak of the subject as tremendously important. So I believe it to be; no doubt my readers share that opinion—or will do so on a moment's reflection. For we are here concerned with habits almost if not quite the most significant which any individual possesses, namely, language habits. No one will deny that the mastery of the vernacular is the supreme achievement of social beings, and probably no one will deny either that there is no other mastery so difficult, requiring as it does adjustments finer and more complicated than those demanded by any other aspect of human behavior. Moreover, these adjustments begin in early infancy, are operative during every waking hour, and have fairly established themselves by the time a child enters the high school. If now the pupil speaks and writes and reads well, it is necessary only that the new environment foster a growth well begun, not hin-

[1] A paper read before the Secondary Department of the National Education Association at Salt Lake City, July 9, 1913. To appear later in "*Social Administration of the High School*," by Charles Hughes Johnson (Scribners).

der it or destroy it. If, however, the entering student has made small progress in language or has accumulated a stock of bad practices, to save him will require the united efforts of all the teachers he may meet. How profoundly true this is appears in the doctrine, now widely accepted, that language habits are special, not general; that proficiency in a given situation offers no positive assurance that we shall find it in another. To illustrate from our common experience, pupils often express themselves well in the English classroom and very badly elsewhere. It is in a sense true that unless all instructors teach English it is nearly useless for any to do so. Hence, co-operation deserves our most serious consideration.

DIFFICULTIES TO BE OVERCOME

By co-operation in English we mean the working together of all the teachers of a school to secure, on the part of their students, the correct and effective use of oral and written expression. We have glanced at the necessity of this; let us now consider with some care the difficulties which any plan of co-operation will involve.

1. *Uniform standards.*—There can be no progress in co-operating in English teaching so long as some departments support by example, or are at best indifferent to, language which others condemn or, what is equally destructive, while some departments offer no positive stimulus to accurate and adequate expression in speech and writing. It may be that the teacher of English is overprecise, a purist, and prizes too little the plain and straightforward expression of the results of observation and thought. It may be that the teacher of science prides himself on his freedom from conventionality and has scant respect for good usage. It is, at any rate, more than likely that each goes his own way, quite unfamiliar with the attitude of the other, and as a consequence the pupil finds it easy to choose the path of least resistance.

One reason for such a state is the overspecialization of students in the universities and of teachers in the high schools. It is now possible for a young man or a young woman to secure the Bachelor's degree, and with it a recommendation to a high-school position, without adequate training in the arts, acquaintance with the

humanities, or grounding in the sciences, as the case may be. The result is a high-school course made up of a series of unrelated units and high-school instruction in which each department not only fails to support the others but may even nullify their efforts. The teacher who knows neither science nor industrial art will make small headway in training a class to express their live interests, while the teachers of those subjects who know little English constantly offend good taste in language and signally fail to complete the training which the English teacher has begun.

A strong reaction against a one-sided preparation which can result only in mutual lack of sympathy and support, and which tends to disintegrate the life of the pupil instead of unifying and harmonizing it, has already set in. It may be desirable to require each teacher in the larger schools to give instruction in at least two departments in order to secure the necessary breadth and catholicity of interest. From the num s suggestions which have come to my notice I quote the following, which is a part of a series of resolutions presented by a special committee to the Conference of High Schools with the University of Illinois in November, 1913.

> All candidates for high-school positions should do work in English extending through at least two years, with emphasis upon oral and written composition. The committee is impelled to make this recommendation because of the deficiencies in English that so frequently characterize high-school teachers. The committee recognizes, however, that even the best technical training in English composition will not alone suffice to accomplish the desired results. In addition to this, every effort should be made in *all* classes to develop adequate habits of clear and concise expression, and to encourage effective standards of diction, syntax, and logical organization. We recommend that the Conference urge upon college and university authorities the importance of emphasizing this phase of education in *all* classes in which intending high-school teachers are enrolled.

The last recommendation is an interesting confirmation of the necessity of co-operation in English, even in the colleges.

2. *Common aims.*—But granting that the teachers of a school have been broadly and adequately prepared and that there exists among them reasonable agreement as to what standards of expression in language should be set up, difficulties will remain. Promi-

nent among these is that of setting up common aims. Overspecialization is the chief stumbling-block here also. The teacher of physics wants to make scientists and the teacher of English wants to make novelists, while both should be eager to make men. Neither has time, or will take it, to visit the classes of the other, and no common interests are discovered. Moreover, co-operation is very generally viewed as one-sided. It is supposed to be a device for giving English a large place in the program or, on the other hand, a means by which teachers of other subjects may unload their manuscripts and escape the grind of correcting them. These objections must be removed before the necessary willingness to co-operate can be secured.

It is not the business of the science teacher to give instruction in the principles of English composition. That subject has its proper technique, and instruction in the technique of composition requires skill born of experience, as in the case of any other sort of instruction. It will be sufficient if the science teacher will but require his pupils to employ to the full whatever command of language they possess. So far as correctness is concerned, it is certainly true that high-school pupils rarely make mistakes out of ignorance. They know what is right but fail to follow it. This all teachers must insist that they do and, like Goldsmith's village preacher, practice it themselves. Teachers in departments other than English need not fear encroachment, then, for it is demanded only that they require the pupils to use the knowledge they possess. This doctrine may, however, be too narrowly interpreted. Many proceed on the supposition that co-operation in English means merely correcting bad grammar, bad pronunciation, and bad spelling, with the possible addition of insistence on neat manuscript. These are certainly desiderata. "These ought ye to have done, and not to have left the other undone." Language is almost identical with thought. Meagerness, confusion, and inexactness of expression are fairly indicative of like qualities of idea. When all is said that can be said for those who think by means of images, objects, drawings, or what not, the fact remains that almost all of our thinking is done with words. Hence, when the teacher of geometry insists on crystal clearness of statement, he is really making sure

that the pupil grasps the idea; when the teacher of history requires the evidence on a point to be properly arranged and adequately set forth, he has really brought the individual and the class to a complete consciousness of the facts involved, has secured full knowledge where half-knowledge lurked before. As soon as all teachers understand this and act accordingly, our problem will be practically solved. As it is now, we divine what is passing in the pupil's mind, supply the words which he cannot find, and hasten on, with a resulting lack of thoroughness which is the most crying weakness of our schools. A few things properly mastered, a few steps carefully taken would result in more knowledge and better training than we now secure by our hurried attempt to orient the boy in his teens in all the formulated and predigested experience of the race. And there is no more efficient means of assimilation and mastery than complete, accurate, and adequate expression in speech and writing. Hence, the teacher of English should enforce a few simple principles of composition that will enable the pupil to plan and execute an oral report or paper in history or in science, and the teachers of those subjects should aid the pupil to secure such a grasp of the subject-matter as will make such reports and papers possible.

3. *Working conditions.*—But quite enough has been said about teachers. They are unable, however willing, to solve the problem alone. School officers and administrators must provide the necessary conditions. Suppose the English teacher meets a class of forty pupils each period of the school day. This is a situation somewhat worse than the average but it is by no means unknown. How, in that case, will he give sympathetic attention to the interests of his pupils so that their practice in speaking and writing may react favorably on their work in other classes? How will he attend carefully to the individual so that his grasp of principles may be assured? How will he retain sufficient energy to consult with his colleagues and devise plans of assault on particularly stubborn fastnesses of metropolitan polyglot or rural *patois?* We write a course of study for the English teacher and crowd it with literary masterpieces—thought important for those who will attend college. Then we demand more than twice as much work of him as he can

possibly do well and wonder why he does not succeed in vanquishing, single-handed, the foes of clear thinking and correct and clear expression which have been intrenched for years, and which can now command aid and succor from all sides during every waking hour.

As for teachers of other subjects, while they are not so grievously overburdened, yet they, too, are often under the necessity of hurrying through a heavy course, with too many pupils to be able to think of the possibility of dividing with someone else responsibility for mastery of the vernacular.

Ultimately the problem of co-operation is one for the principal, the superintendent, and the school board. It is primarily a question of economics. The task of providing a people's college in every town and section to which the humblest may freely go and in which he may receive instruction in almost every branch of human knowledge and training in every art known to man is greater than is generally realized. To make our already large investment pay we must more than double it. A fair question may be raised as to whether we are justified in diverting large sums for the purchase of equipment to turn out a few would-be engineers, for example, when we do not provide adequately for training all in the fundamental arts of life. At all events, it will require as much zeal and pride and generous outlay to secure notable results in English as in molding and turning, and the sooner this is realized, the sooner we shall get results.

In a given school, then, co-operation in English must be brought about by the principal. He alone can see the problem from all sides; he alone is free, or ought to be, from predilection for one activity or interest; he should see his boys and girls as developing beings with whole undivided lives; he is in a position not only to institute plans, but to see that they are carried out, and to judge of the results. Wherever any measure of success in co-operation has been secured, the principal has generally been the guiding force.

SUCCESSFUL PLANS

This brings us at last to the point where we can speak for a moment of a few successful plans. Most notable, perhaps, is that now in operation in the Cicero Township High School near

Chicago, Ill. This is a school in an industrial community. The parents are largely of foreign birth and not well to do. The pupils enter high school as much in need of training in the vernacular as any that can be found. What Principal Church is doing here will be done elsewhere—as soon as the importance of it is realized.

Mr. Church recognized the economic aspect of the problem and began reform by inducing his board to supply him with additional teachers. He has thus reduced the number of pupils assigned to a teacher of English to sixty. These teachers are on duty in their classrooms throughout the school day and afterward to deal with individuals and to discuss their oral and written work with them. The next step was to secure unanimity of effort in certain specific matters. This was attained by having the English teachers prepare a brief statement as to what other teachers might do to enforce the instruction they were giving; as, for example, the correcting of grammatical errors, the use, when appropriate, of full sentences, etc. Eventually, it was found desirable to issue a monthly bulletin by means of which each teacher might know what instruction in English was being given and might demand that it be observed in his recitations. It was agreed that all departments should keep a separate and distinct record of the quality of the English used by each pupil, and that the average of such marks should constitute 25 per cent of the composition grade given to the pupil at the end of the semester.

The effort is described by competent observers as wonderful. The entire school is pervaded by an atmosphere of good English, and the performance of the pupils, coming as they do from ill-educated homes, is comparable to that which may be found in the small, high-grade private school.

Another typical example of successful co-operation is to be found in the Boston High School of Commerce. The principal, Mr. O. C. Gallagher, describes their plan as follows:

> To keep the pupils on the watch for accurate, effective, and smooth composition in all their work, they were informed that at frequent, though unstated, intervals their papers in other subjects would be corrected by their English teachers to ascertain their observance of the principles taught in the English classes. The marks thus obtained are entered upon the regular composition work, and unsatisfactory papers are revised or rewritten, the same as unsatis-

factory themes. In addition, teachers of other subjects are urged to send batches of papers whenever pupils seem to be growing careless—a condition that often prevails immediately after the correction of sets of papers in subjects other than English.

The teacher of the other subject demands that the work be clear and substantially correct in spelling, punctuation, and sentence structure. Failing to secure the first, he lowers the pupil's mark, and at his option, demands revision; failing to secure the second, he withholds all credit until the work is presented in a satisfactory form. The teacher of English insists that every piece of writing shall be regarded as an English theme to be corrected, revised, and rewritten, and to count in the making-up of the mark in English. The collection of papers at unexpected moments convinces most pupils of the unwisdom of taking chances; for even if the English teacher fails to collect a set the teacher of the other subject is likely to send him any piece of slipshod work.

Again, a conscientious attempt is made to teach pupils how to answer questions in other subjects. We correlate the English work in the first year with history; in the second, with commercial geography; in the third, with local industries and civil government; in the fourth, with business law and economics. By drawing upon these branches for occasional subjects, and correcting the themes orally for sentence structure, unity, mass, and coherence, we try to train the pupils to bear in mind the principles of English while their attention is focused upon another subject. Similarly in connection with science, descriptions of apparatus and expositions of experiments are required, and the teacher of science is consulted as to the adequacy of the productions from a technical standpoint. With foreign languages the English department has found most need for co-operation in drill upon points of grammar as they are taken up in German and in French.

Besides "corrective" co-operation, there is such a thing as "preventive or anticipating" co-operation, which is quite as important as the other. Since most teachers are interested in English as a means rather than as an end, the use of English must be made effective in recitation as well as in writing. Several subjects taken up in the first year of a secondary school lend themselves readily to such drill, especially history and elementary science. After consultation between the teacher of English and the teacher of history, the history textbook may be taken up in the English class, and the pupil taught how to make his English do the work that the author tried to have his do. What has the author aimed at? Did he hit it? Why? How? This brings the pupil to the outline; he must get his sights in line. Then the discharge—oral delivery. The class watch as markers, criticize the sighting, aiming, line of flight, and the hit. The aim is thus upon the English essentials of unity and coherence, in whole composition, paragraphs, and sentences.

The result is easier work for the teacher of history, for the teacher of English, and for the pupils, since the work in the English class is "a practical job."

The pupils can measure the success of their effort in one class by their achievement in the other.

Reports from several other schools embody some of these ideas and suggest a number in addition. One of the most striking is that of keeping pupils on probation in English throughout the course. Delinquents who have been warned and who fail to improve are remanded to the English department for such further training as seems necessary. This may result in the establishing of a sort of hospital squad. Naturally pupils wish to get out of the hospital as soon as may be. Sometimes it is possible to require those who persist in making mistakes in externals, such as spelling, to take a course in typewriting. Again, certain teachers or departments find it feasible to employ the same subject-matter for a part of the course. Science notebooks are made the basis of studies in sentence structure in the English class, pupils engaged in shopwork are taught how to organize notes on their projects in the form of analytical outlines, etc. The outside reading of the pupils is sometimes directed to lists of books which have been made up by all departments in conference, and care is exercised that only a reasonable amount of collateral reading be required of any pupil. Similarly the amount and distribution of written work is determined, the form of notebooks is agreed upon, etc. Of great importance is the compiling of a standard guide to the preparation and correction of manuscripts, which should reflect the practice of good publishers, and which should be in the hands of all teachers and pupils and consistently adhered to.

Various attempts have been made to work out a practicable method of grading so that due account may be taken of the value of substance on the one hand and externals of form on the other. Some years ago, Mr. G. H. Browne, head master of a preparatory school in Cambridge, Mass., established in his institution the custom of dual marking by means of a "numerator" and a "denominator." The mark above the line was to stand for substance in all papers, including those for the English teacher, while the mark below the line was to indicate excellence in "mother-tongue," that is, spelling, etc. Marks of the latter sort were sent in by all teachers, averaged, and reported to the parents. The effect is said

to have been immediate and gratifying. Lately the practice of holding occasional conferences at which a few papers are examined, corrected, and graded by members from all departments has been growing in favor. Marking has been further systematized in a few cases by the working-out of some sort of scale after the general plan of that invented by Professors Thorndike and Hillegas. These conferences are necessary and may be made the means of unifying and co-ordinating the activities of the different departments of a school to a remarkable degree.

To summarize: Co-operation in English composition, to be successful, must be organized and administered by the head of the school for the good of all. This will involve the setting-up of common aims and the establishing of suitable working conditions. Instruction in the technique of speaking and writing should be regarded as the work of the teachers of English. Teachers of other subjects should refuse to accept oral reports or written papers which are below the standards agreed upon. If the delinquent student fails to repair the deficiency, he should be reported to the principal and sent to the English department for further training. In matters of substance, particularly clearness and completeness, the teacher of each subject should point out the weakness, cause it to be removed, and apportion credit to the paper in accordance with the degree of success attained. By means of class visitation and conference, teachers of English and of other subjects should seek to join their efforts so as to accomplish the most effective training of the student in the arts of study and of expression with the greatest economy of his time and the most consistent unifying of his life.

THE USE OF PHONETICS IN TEACHING ELEMENTARY FRENCH[1]

E. B. BABCOCK
University of Chicago

"The main axiom of living philology is that all study of language must be based on phonetics."—HENRY SWEET.

Before discussing this subject we must come to some understanding as to what we aim to teach in classes in elementary French and what we mean by the use of phonetics. While no two teachers probably would agree in regard to the first of these points, the conflict that has been raging in Germany for the past thirty years has somewhat cleared the situation. We have no right to give much consideration to the relatively few pupils who are going to travel extensively in Europe, or remain there in the diplomatic service, as representatives of business houses, or for study or pleasure. But scholars seem to be unanimous in the opinion that whether or not the pupils are to use the spoken language in after life, they can never acquire a sound knowledge or a delicate appreciation of a foreign speech unless they pronounce it correctly. If this were not the case the task of the teacher of French would be greatly simplified, for no attention need be given to the most difficult and complicated part of it, the teaching of pronunciation. The students would simply pronounce the French words in the English manner. They could devote all their attention to the learning of grammatical structure and the meanings of words. This paper would have no *raison d'être*. The ability to read French with profit and enjoyment is what the vast majority of those who study it in school and college will find most useful. But this power can best be gained by learning to pronounce the language, and to pronounce it correctly. Language and sound must go together, and the ear is an indispensable aid to the eye. Its help is very considerable from a

[1] Paper read at the Educational Conference with Secondary Schools, April 18, 1913.

purely mnemonic point of view. "It is a well-known psychological fact," says Professor Hempl, "that the mental activity involved in pronouncing a word fixes it much more firmly in the mind than do the processes involved in simply seeing and hearing it. It is therefore true economy to practice the oral use of a language, even when the primary aim be but the acquisition of a power to read."[1]

It is often claimed that the pronunciation of French can best be learned by imitation, just as the learner acquired his own language when a child. But both reason and experience show the purely imitative method to be insufficient. For the pupil in the classroom is in a very different position from that of the child in the family. Even if we disregard the difference in age and the fact that the pupil no longer possesses the imitative faculty which he had when he was learning English, the relatively small amount of time that he can give to our study places him at an enormous disadvantage. But his greatest inferiority lies in the fact that he tends constantly to substitute English sounds for French ones. How strong this tendency is can be readily perceived by anyone who has heard French spoken by people of different nationalities, even if they have lived many years in France. The necessary shift to a new basis of articulation is the all-important thing to understand and effect when one undertakes to learn the pronunciation of a new language. The only way that the position and the action of the vocal organs can be made clear to the pupils is by the use of phonetics. Even if the student were not handicapped in the ways shown above, it would be unwise to subject him to the long and painful apprenticeship through which every child must pass in learning his mother-tongue. For even where conditions are most favorable pure imitation does not produce perfect results. The child does not exactly reproduce the pronunciation of its parents, since he owes much to other than parental influence, and only those differences are corrected which attract attention. Otherwise it would be difficult to account for the changes which are constantly taking place in language sounds. There are many Americans who are unable to pronounce *gl* (as in "glass") for which they regularly substitute *dl*, and there are Frenchmen who cannot articulate

[1] George Hempl, *The Easiest German Reading for Learners Young or Old*, p. xv.

saucisson correctly. Faults of this nature can usually be easily corrected by a simple explanation of the formation of the sounds.

In 1877 Sweet wrote in his *Primer of Phonetics:* "The importance of phonetics as the indispensable foundation of all study of language—whether that study be purely theoretical or practical as well—is now generally admitted." And yet so loath are we to accept anything new that, in spite of extensive use in Germany and France, the practical value of phonetics in teaching has received but slow recognition in England and America. It is objected that the study of a foreign language is already difficult enough without complicating it by the introduction of a new alphabet of "barbarous signs." But those who advocate the use of phonetics in the teaching of elementary French do not propose to add another subject to an already overcrowded curriculum. Whatever may be our opinion about the profit which the pupils would derive from such a study (and it is difficult to find one more fascinating), it is clear that the elementary French class is not the place in which to teach phonetics as a science. It must always be kept in mind that it is a means to an end, and should be employed only in so far as it advances that end. If we are to teach French pronunciation at all, we must teach it as correctly as possible, and we cannot afford to neglect anything which will help us in our difficult and arduous task.

Now just what is meant by the use of phonetics in the classroom? By this I mean such analysis of English and French sounds as will enable the students to understand the differences in the articulations of the two languages, and thus avoid the substitution of the former for the latter. I am convinced that by this means the teaching of the pronunciation, at any rate, may be greatly facilitated, simplified, and made more accurate. Probably every teacher makes use of phonetics to a limited extent without realizing it, just as Monsieur Jourdain "faisait de la prose." Every time a student is told that *s* between two vowels is pronounced like a *z*, or that the sound of *y* may be produced by placing the lips in the position for *u* and the tongue in that for *i* he is learning phonetics. In fact any comparison of English and French sounds belongs to its province, but unfortunately such comparisons are

usually so inaccurate that they do more harm than good. Teachers would certainly feel at a loss if they were forced sinply to pronounce the sounds of French without making any comment whatever upon them, and this very fact shows that the need for phonetic analysis is felt. The moment that these explanations are made accurate and systematic, so that the pupil is compelled to do some definite comparing and clear thinking for himself, the right use of phonetics is being made.

It would be theoretically possible, but practically very difficult, to teach French pronunciation orally without having recourse to any form of writing. Fortunately, however, phonetics has at its disposition an invaluable aid. That the necessity and value of a phonetic alphabet have been so generally and completely misunderstood is due in large part, I think, to a misapprehension of the nature and purpose of such an alphabet. Both the difficulties connected with its use and the claims made for it have been grossly exaggerated. I have been triumphantly told by teachers that if they had not first known the sounds represented by the symbols they would not have been able to pronounce them, and that they would not take the trouble to learn "those funny letters" even if they did give a perfect pronunciation! As if in some miraculous way the symbols took the place of the teacher, and were a royal road to conversational fluency! Of course no system of signs can be devised which will teach a sound of French that has not been heard and learned, and the teacher who resorts to them will find the importance of his rôle has been increased, not lessened. But in order that each articulation may be remembered and applied correctly it must be associated in the mind of the learner, as it is acquired, with some symbol which everywhere stands for that sound and never for any other. For it must be remembered that anyone who undertakes to teach French pronunciation is confronted with a double problem. He must explain (1) the formation of French sounds and how they differ from the sounds of English, and (2) how these sounds are used in French, under what circumstances vowels are open or closed, long or short, in what ways sounds are combined, etc. (orthoëpy). Now it must be obvious that, having once taught the pupils how to pronounce

the sound each symbol represents, phonetic script must be of the greatest help in explaining the orthoëpy of French. The comparison with the child who learns to read his own language correctly without the use of anything but the standard or nomic orthography is beside the question. Because, in so far as he does pronounce it correctly, it is because he learned the articulation before he did the spelling, and we all know how easy it is to mispronounce a word we have never heard. Every dictionary finds it necessary to use some sort of special signs to indicate pronunciation, even though it is dealing with the native language of its readers. But the student who is beginning the study of French must learn an entirely new system of sounds and the standard orthography is an absolutely inadequate guide as to the sounds which appear in the various words. In German, Spanish, and Italian the spelling is a relatively safe indication of pronunciation, but in English and French radical changes must be made. Here again we must note that these symbols are not an end in themselves but merely a positive help in learning something that has to be learned anyway. Instead of writing for the beginner the sound *ẽ*, *in* as in *fin*, *im* as in *impossible*, *aim* as in *faim*, *ain* as in *main*, *ing* as in *poing*, *ein* as in *sein*, or *en* as in *examen*, he is given a sign which always represents that sound. That such a system saves a great deal of time to both teachers and pupils is as evident as that the use of mathematical symbols or that of figures instead of words in dates is an economy.

The question now arises what sort of phonetic symbols should be adopted. There are at least 37 distinct sounds in French, while the alphabet contains but 24 letters, of which *x* stands always for two sounds and should be discarded as liable to occasion wrong associations. If we use all the other letters in the standard alphabet we shall need 14 new symbols. Now the best script for our purpose is that which makes the greatest use of the letters already familiar, which introduces as few new signs as possible, and which selects new symbols, the appearance of which is as little disconcerting as may be. Probably each teacher will have his own preferences in this connection. But here the point of expediency enters that question which is of such importance in all teaching. Since the most widely

used grammar in this country (and the appearance of a new edition will probably increase its use) and the best French-English pronouncing dictionary use the symbols of the International Phonetic Association, and since scores of texts have appeared and are appearing based upon this system, it seems to me best to choose it for our own teaching.[1] The fact that prominent phoneticians, who devised schemes of their own, have replaced them in later editions of their works by the international alphabet points to a constantly wider dissemination of the latter. Personally, with only my own classes in mind, I should prefer certain changes in a system which seems to me in most respects highly satisfactory (*u* for *y*, *ou* for *u*, *eú* for *ø*, *eù* for *œ*, *ã* for *ẽ*). But these points are of small importance when compared with the advantages derived from a scheme which has been generally accepted.

There are two ways in which phonetic symbols may be used: (1) they may be employed in connection with standard spelling and used in explanation of it, or (2) they may be the only letters used until the sounds of the language have been mastered. The first of these methods has the great disadvantage of confusing the pupil, so that he fails to keep the two kinds of writing apart. It is still widely adhered to because it is felt that the transition to the usual orthography will be difficult at a later period. The consensus of opinion among scholars and teachers who have tried both plans is that the difficulty of this transition is not nearly so great as is ordinarily supposed. The point here seems to be that as soon as the sounds of the language are gained even the illogical orthography of English or French can be easily read. Indeed, when written phonetically many words are not changed at all, and the majority will keep some of their usual letters. A great part of the exceptions which complicate French grammar, the plural of nouns, the feminine of adjectives, the agreement of the past participle, the irregular forms of verbs, etc., are after all questions of spelling. As soon as the ear is familiar with the spoken language these orthographic idiosyncrasies offer but little difficulty.

I shall now attempt to give some idea of how I think French pronunciation should be taught. The amount of time devoted to

[1] See James Geddes, Jr., *A Universal Alphabet*, p. 12.

it must of course vary in every school and with every teacher, but I believe that it should be as considerable as possible. At the very beginning I give some explanation of the nature of sounds and their production, but in the simplest manner and with avoidance of scientific terms. Because of lack of space I cannot reproduce the instruction in detail, and each teacher must devise his own plan for making the pupils understand what is essential, since, it must be adapted to their number and age. In general the method should be that of questioning the students, and they should thus be led to discover and state the facts themselves, the teacher being careful not to give any rules in advance. The first thing to be made clear is that no sounds of English and French are exactly the same, and that while there is rather close correspondence in some cases, other French sounds are so different from any of ours that their production is decidedly difficult for us. These differences are in the main due to the fact that in speaking French the tongue is forward in the mouth, the movement of the lips is very pronounced, and all the vocal organs, while more tense and rigid than with us, take their positions more rapidly and decidedly. When the pupils are quite familiar with the fact that French is a very different language from English I begin to give them some idea of the nature of sounds. The distinction between voiced and voiceless consonants can best be made clear by asking the pupils to pronounce such words as "fine," "soon," "shoe," then to prolong the first sound of those words and compare it with the first sound of "vine," "zone," and the *zh* of "measure." The distinction may be confirmed by singing the sounds, by holding the hands over the ears, or by taking hold of the Adam's apple while the experiment is in progress. The alternation of *fvfvfvfv* and *ava*, *afa* further illustrates the point. Care should be taken that only the phonetic value of the sounds themselves be permitted, thus *f* not *ef*, *v* not *vi*. That all vowels are voiced and may be indefinitely prolonged will now be evident, and we may next consider the lip sounds *p*, *b*, *m*, those produced by contact of the point of the tongue with the roof of the mouth, *t*, *d*, *n*, and those formed by contact of the back of the tongue with the roof of the mouth, *k*, *g*, *ng*.

We may next take up the sounds of French. Those which are most difficult for the beginner are (1) the *y* and *ø*, (2) the oral

vowels *i*, *e*, *u*, *o* which are pure in French and diphthongized in English when long, (3) the nasalized vowels, (4) the semi-consonants *ɥ*, *w*, and *j*, (5) the *r* sound, (6) the *l* sound. It is well to keep in mind, I think, that those sounds which have no counterparts in English are frequently acquired in a much more satisfactory manner than many others which on account of their resemblance to some in our language long prove troublesome. For example, many Americans who pronounce perfectly *y* and *ø* are never able to distinguish *e* from *ɛ*. The acquisition of the sounds *y* and *ø* by lip position for *u* and tongue position for *i* and *e* respectively is explained in most grammars. The two vowels should be practiced together. The difference between the English diphthongized vowels and the French pure ones can be now discussed and explained (i.e., the raising of the tongue during the articulation of the former). At this point an English sentence may be pronounced for illustration in which the vowels are given the French values. And from time to time a passage may be read in French or a short story told, in order that, although it be quite unintelligible, the general effect of the language may be given the pupils. I should not need to say here that only English should be used in conducting these early lessons if the contrary were not often the practice. French short vowels are learned simply by shortening the long ones. Phonetic symbols are of special service in teaching the nasalized vowels since the association with *n* and *ng* disappears and the pupils are told, or rather, shown, that the sound is the same as for the pure vowels except that part of the air passes through the nose. The semi-consonants in *lui* and in *oui* may be demonstrated in the formula *ɥ*:*y*=*w*:*u*. For the rest of the consonants the general rule that the tongue is forward (notably in *t*, *d*, *n*, flattened in *l*) is sufficient. The *l̥* and *r̥* (*article*, *maître*) account for the fact that these sounds disappear in rapid speech. However, it is in the treatment of "mute *e*" syllables, assimilation, elision, and linking that the phonetic script proves most useful. And it is most important in French that the learner realize that speech takes place in stress groups and not in words. For in no other language are the sounds so affected by the nature of those surrounding them, as well as by emphasis.

There can be no question but that the educational value of the study of French will be greatly enhanced by the use of phonetics

in elementary classes. It cannot fail to foster in the pupil habits of precision and accuracy. If it be true that the student of language must first observe, then compare, and finally draw conclusions, our method will furnish excellent training for him. The hit-or-miss method that is often used to teach pronunciation does positive harm to the learner. Besides having the two disadvantages mentioned by Jespersen, that he can neither understand a native nor be understood by one, it gets the pupil into the bad habit of being satisfied with mediocre results. The satisfaction that comes from doing well a perfectly definite task will more than repay him for the new effort involved. It may be confidently asserted that the discussions in class will reveal a new and fascinating world in which he will take a keen interest. Furthermore, the learner must verify what he is told about the production of speech, he must do his own experimenting and rely upon the evidence of his own senses. We hear the statement in all quarters that our instruction is failing to develop mental power and vigor. Our students study year after year, adding, to be sure, to their store of knowledge, but not growing proportionately capable of clear, independent thinking. Phonetics will teach them that in languages we are dealing with sounds, not letters, an idea that will probably be new to them. As they see the inconsistencies and absurdities of both English and French spelling they will lose the feeling that the present systems have anything sacred about them, and whether a thorough, scientific, reformed spelling be adopted in their lifetime or not they will see the advantages of it, and will be able to take an intelligent interest in the discussions which are sure to become increasingly frequent and fruitful.

No one can transcribe a passage of either English or French into phonetic script without learning something by so doing that he could have obtained in no other way.[1] Thus the interest of the pupil cannot but be aroused by such an exercise. If he ever takes up the study of another language what he has learned about sounds in general will be of help to him.[2] Even the study of Greek and

[1] See the *Report of a Joint Committee on a Phonetic English Alphabet*, p. 16.

[2] Schweitzer says that it is most helpful to represent the different groups of letters which are pronounced alike in French *maille*, in German *mai*, *mein*, and in English "*mine*," "*lie*," "*bright*," by the same symbol. See *Revue Universitaire*, 1903, 2, p. 10.

Latin will take on a new aspect. Who can tell to what extent interest in the classic languages might be stimulated if it were possible to discover their lost intonation?

But while the foregoing considerations are important and might be greatly developed, they are beyond the purpose of this paper. The only proof of the correctness of its contention lies in the results which are now being obtained and which are going to be obtained. "Of all the students of Teutonic Origin," says Rosset, "who learn French, it is certainly the Germans who, in spite of more numerous and greater difficulties, succeed most quickly in speaking correctly because both teachers and pupils have received a theoretical and practical phonetic education."[1] In conclusion I bespeak a fair trial for the phonetic method of teaching French pronunciation for the reasons I have given and which I may sum up as follows:

1. The old way of teaching does not give satisfactory results.

2. Mere imitation of the pronunciation of the teacher is not sufficient.

3. The only way in which the correct pronunciation can be taught is by an explanation of the formation of the sounds of French, based upon phonetic descriptions and comparisons, or rather contrasts, with the sounds of English.

4. Much time is saved by showing the combination of these sounds in speech by phonetic script in the beginning, the standard orthography to be learned later.

5. The educational value of the teaching of pronunciation by the use of phonetics is very great.

I do not think that Professor Jespersen is guilty of exaggeration when he writes: "We want to have some phonetics introduced into our schools because theory has convinced us, and experiment has proved to us, that by means of this science we can, with decidedly greater certainty, and in an essentially easier way, give an absolutely better pronunciation in a much shorter space of time than would be possible without phonetics."[2]

[1] Th. Rosset, *Du rôle de la phonétique dans l'enseignement des langues vivantes*, p. 6.

[2] O. Jespersen, *How to Teach a Foreign Language*, p. 143.

GREEK AND LATIN IN THE SCHOOLS OF BELGIUM[1]

JOHN G. WINTER
University of Michigan

Educational reform is a problem as old as Plato, and will continue to be a problem as long as education itself endures. When the problems cease troubling education itself will be a *caput mortuum*, and the need of reform will be greater than ever. There was an ancient pool, you will remember, of which it is written: "An angel went down at a certain season into the pool, and troubled the water: whosoever then first after the troubling of the water stepped in was made whole of whatsoever disease he had." The educational pool closely resembles that other: troubling angels are constantly needed in science, philosophy, and religion.

But the mere troubling is not enough: it must be done by one who has knowledge both of the slumbering depths and of the human ills that wait to be healed. Mere troublers—yes, we have had store enough of them from Protagoras and his fellow-sophists to their last descendants, pseudo-teachers of teaching, educational cubists, who plead for studies that strengthen the hand, not the head, for wood-carving instead of classics, burnt leather instead of literature, and agriculture instead of culture.

The movement for reform, so called, is not symptomatic of conditions in America alone. Neither are the classics the only object of attack. Everywhere, and in all departments of life, there is a revolt against accepted standards of education, of art, of morality. In education we have the prevalent fallacy that one subject of study is as good as another. In art we have Impressionists, Futurists, and Cubists, who look back upon the spirituality and sincerity of Rembrandt as things outworn. In morality the prevalent theory of Protagoras, that man is the measure of all things, and that hence each is a law to himself, leads to an individualism of conduct and belief which is incompatible with all

[1] Read at the Michigan Classical Conference, April 3, 1913.

theories of organized society and destructive of the two cardinal virtues of character-building, obedience and loyalty. Matthew Arnold's definition of philistinism is truer of our day than his own: "In things of beauty and taste, vulgarity: in things of feeling and morals, coarseness: in things of the mind and spirit, stupidity—this is philistinism." Frederic Harrison has called it the cult of the Foul:

> The new craze under which we are now suffering is the cult of the Foul, or, to put it in Greek, it may be dubbed Aischrolatreia-worship or admiration of the Ugly, the Nasty, the Brutal. Poetry, Romance, Drama, Painting, Sculpture, Music, Manners, even Dress, are now recast to suit popular taste by adopting forms which hitherto have been regarded as unpleasing, gross, or actually loathsome. To be refined is to be "goody-goody"; gutter slang is "so actual"; if a ruffian tramp knifes his pal, it is "so strong." . . . . Painters are warned against anything "pretty," so they dab on bright tints to look like a linoleum pattern, or they go for subjects to a thieves' kitchen. The one aim in life, as in Art, is to shock one's grandmother.[1]

A part of the protest against the vulgarity and superficiality of the age is the vigorous defense of the classics in France, Belgium, and elsewhere. For all humanists believe it is a grander thing to be in spirit with the ages than in spirit with the age. Critics like Brunetière, Faguet, Poincaré, the mathematician, "Agathon," and Anatole France have been eloquent defenders of the ancient humanities because they realize that the history of the spiritual struggle and achievement of the human race is one, and the lines of demarkation between past and present fade easily away. Sane criticism looks with philosophic disdain upon time and space. It realizes that the thoughtful do not wholly live in any one time or country, but are the heritors of all the ages; that they are citizens of an ideal city which is nowhere upon this earth, and that they view all things under the form and aspect of eternity.

In Belgium the debate between the defenders of the classics and the pedagogists who would eliminate Greek from the schools, minimize Latin, and substitute modern languages and manual training is just now very keen. The bilingual character of the country and its intense commercialism threaten the stability of the

[1] Quoted by Grandgent, *Proc. Mod. Lang. Assoc.*, 1912, p. lv.

classics in a marked degree. A comprehensive scheme of reform is set forth in two bulky volumes, called *La reforme de l'enseignement*, by G. Van Overbergh, the director general of higher education (Brussels, 1906). The last and best statement of the humanist's position is that by J. P. Waltzing, professor at the University of Liège, in an address to the Deliberative Council of Secondary Education, published at Brussels, in 1913. Before discussing the proposed reforms and the position of Professor Waltzing, however, I wish to say a word about the Belgian school organization.

Belgian secondary education (*enseignement moyen*)—the only part of the system with which we are here concerned—was organized by law in 1850. It is directed by a general inspector and two subordinates, one for the humanities (ancient and modern), the other for mathematics and the sciences.[1] The secondary schools comprise (1) the *athénées*, (2) communal colleges, (3) private colleges, (4) the inferior order of secondary schools.

1. The *athénées* are day schools for boys only and stand at the head of the secondary educational system. The head master and assistant masters must have the Doctor's degree from a university, while the assistants must have a university diploma. There are twenty *athénées* at present. The course of study is arranged in three parallel sections: Latin and Greek humanities; Latin humanities; modern humanities. Each section consists of seven classes, that is, seven years of study. Latin is given 6 hours a week the first year, 7 hours the second, and 8 the remaining five years, making a total of 53 hours. Greek is not taken the first two years but is given 5 hours the remaining five years, making a total of 25 hours. This is the classical program for the Greek and Latin humanities. In the section called the Latin humanities there is no Greek, and the equivalent in time is devoted to more mathematics and sciences. In the section called modern humanities there is neither Latin nor Greek, and the equivalent in time is devoted to commercial studies.

The diploma given upon the completion of the seven years admits the student to the universities, for which most of the students are aiming. The diploma of the Greek and Latin humanities,

[1] Cf. Monroe, *Enc. Educ.*, article "Belgium."

however, is held in highest honor, admitting the holder to any department of the university. The diploma of the Latin humanities comes next, admitting the holder to the higher technical schools. The modern humanities diploma admits only to the commercial and consular sections of the Universities of Ghent and Liège.

2. Besides the *athénées* there are seven communal colleges, that is, schools under local government. These are the ecclesiastical schools.

3. There are eight private colleges.

4. The last class of secondary schools, called the lower order, has a three years' course of study devoted largely to manual training and commercial subjects. There are 88 such schools for boys and 40 for girls. Since neither Latin nor Greek is taught in them they need not concern us here.

We can gain some idea of the place of the classics in the Belgian schools from the following statistics. In 1908[1] the twenty *athénées* had a total of 5,890 students. Of these, 1,441 were enrolled in the Greek and Latin humanities; 490 in the Latin humanities; and 3,959 in the modern humanities. The seven communal colleges had a total of 727 students. Of these, 245 were enrolled in the Greek and Latin humanities; 40 in the Latin humanities; and 442 in the modern humanities. The eight private colleges had a total of 1,156 students. Of these, 1,034 were enrolled in the Greek and Latin humanities; none in the Latin humanities; and 122 in the modern humanities. Thirty-five per cent, therefore, of all these students were enrolled in the Greek and Latin humanities; 7 per cent in the Latin humanities; and 58 per cent in the modern humanities.

The latest statistics available, namely for the year 1910,[2] show 2,943 students in the Greek and Latin humanities; 624 in the Latin humanities; and 4,439 in the modern humanities. Therefore, 36.7 per cent were enrolled in the Greek and Latin humanities; 7.3 per cent in the Latin humanities; and 56 per cent in the modern humanities. In other words, the classics have been

[1] Monroe, *Enc. Educ.*, p. 348.

[2] Waltzing, *Le grec et le latin*, p. 37.

holding their own, while the modern humanities show a slight loss. This result is especially gratifying to the lovers of the classics because the attempts to break down the classical tradition have been more persistent in Belgium than anywhere else in Europe, or in America, for that matter. When we remember that 42 per cent of the population speak Flemish only, and 38.2 per cent speak French only, it is apparent that the question of modern languages is one of vital concern in that busy little country. The economic condition of the country, furthermore, calls insistently for engineers, mining experts, and leaders in the industrial arts. The debate regarding the position of the classics in the secondary schools is, for this reason, a national one, wherein both sides are sincerely actuated by an intense desire for unity of spirit and national progress.

The programs of the reformers vary considerably in detail.[1] In general, they may be summarized as follows:

1. Eliminate Greek from the Greek and Latin humanities.

2. Reduce the time devoted to Latin; some would eliminate Latin altogether but the prevailing belief is that Latin should remain.

3. Insist upon a profound study of the native language and the national literature and make them the center of the new humanities.

4. Finally, devote more time to the study of foreign languages and geography.

It may be interesting to know that a protest against the elimination of Greek and the reduction or elimination of Latin was formulated and signed by more than two hundred University professors, among them mathematicians, naturalists, physicians, and men of rank, and by more than fifteen hundred professors of the *athénées*. The protest was sent to the Deliberative Council of Secondary Education. I wonder how many American university professors—not professing classicists—would sign a document like the following:

> Secondary education is passing through a crisis in our country which can escape the attention of no one. A plan of reform involving the entire program is being discussed, and the place assigned to the Greek and Latin languages and literatures is put in question. We do not wish to prejudice in any way

[1] *La reforme de l'enseignement*, I, 160–207.

the decisions which will be made by the Committee on the Reform of the Humanities, but we believe it our duty to make known our opinion on the gravest question of education, the maintenance or the suppression of the Greek and Latin humanities. We do not at all deny that the organization of our education may be susceptible of change and progress; and in regard to the details of these reforms we reserve the freedom of action and belief of each of the signers, but we are all in agreement upon the following points:

We desire to affirm, first of all, our absolute faith in the efficacy of the Greek and Latin humanities for the education of the higher classes. We have the profound conviction that it is essential to the highest interests of our country, to its intellectual, aesthetic, and moral culture, that the youth of our schools, who, one day, are destined to be the élite of the nation, remain under the influence of the literary and artistic thought of the Greeks and Romans by the study of the classical languages and literatures. No respectable interest, the economic as little as any other, can be compromised thereby. We believe, on the contrary, that the abandonment of a system of education, consecrated by the experience of several centuries, would be retrogression for our country. We demand that this sacrifice be not rashly made, especially since the chief nations which are endeavoring to extend their economic influence, Germany and England, for example, refuse to decide this grave question definitely. The great danger lies in the utilitarian spirit which is hostile to all truly disinterested study, and which tends to reduce all the problems of education to a monetary value. The school ought, undoubtedly, to prepare the young man for life, but for the whole of life, and pitiable, indeed, would be the nation where to make money should be the only ideal, where all education should be reduced to the search for the best processes of self-enrichment, whether at home or abroad; where, in the desire for material expansion, the expansion of science and intelligence should come to a halt.

To this theoretical declaration we wish to add a demand of a practical character. Without concerning ourselves here with the details of a program of studies or the method, we demand that the program of the humanities continue to take account of the essential importance of the Greek and Latin languages and literatures, that it give them a number of years and hours commensurate with their eminent worth.[1]

The classics in Belgium have no better defender than Professor Waltzing. It is not my purpose to review in detail his masterly exposition of the aims and ideals of classical study. I shall merely enumerate some of the chief points of his argument. Many of them, you will perceive, have a distinctly national application. Professor Waltzing maintains that the study of Greek

[1] Waltzing, *Le grec et le latin*, pp. 7, 8.

and Latin inculcates, first of all, a disinterested love of knowledge. The modern humanities, by both their content and method of instruction, are permeated with a spirit of utilitarianism. That, in fact, is their primary appeal in the minds of many educators. In the study of Greek and Latin, on the other hand, the student is accustomed to fasten his mind upon an object considered in and for itself, and not with reference to its practical utility (p. 47). À propos of this subject, M. Poincaré, the illustrious mathematician, says:

> It is by the contact with the ancient literatures that we best learn to turn aside from that which has merely a contingent and particular interest, to interest ourselves only in what is general, to aspire always to some ideal. Those who have tasted them become incapable of limiting their horizon; the external life speaks to them only of their daily interests, but they only half hear the voice; they are in haste to see something else; they carry with them everywhere the nostalgia for a better land.

And speaking of the disinterested love of knowledge, the same writer continues:

> This is the spirit that breathed upon Greece in the olden times and gave rise to poets and philosophers. There remains in our classical education something or other—I know not what—of this old Greek soul, something—I know not what—which always makes us look upward. And that is more precious in the making of a savant than the reading of many volumes of geometry [p. 48].

I have dwelt upon this argument because it is one upon which we need to insist in our own academic life. Knowledge for its own sake—may we never lose sight of that!

In the second place, the study of Greek and Latin inculcates the spirit of objective criticism. "The study of the ancient world," says Bazin, "gives us a truer idea of the present, and destroys that dangerous naïveté which leads beginners to believe that errors are progress, and that the braggadocio of the present is a new thing" (p. 50).

Third, the study of Greek and Latin develops the habit of independent work and personal judgment. The modern languages resemble each other in that they are all analytical, and are, furthermore, all the expression of the same civilization, developed since

the Middle Ages. "The Greek and Latin words differ not only from the native language as words: the composition of the idea is different: it is necessary to analyze it before it can pass into the process of translation" (p. 51).

In the fourth place, the study of Greek and Latin creates a sense of tradition and a sense of evolution, things which the modern languages cannot give (p. 55).

The charge, so often made, that Greek and Latin possess no immediate utility, is met more specifically by Professor Waltzing. Greek and Latin, he maintains, are useful, first, because they afford an unparalleled intellectual discipline; second, because they are a direct help in the mastery of the modern languages. Translation from Greek and Latin is the best school for an exact, forceful style. Third, they are almost indispensable for a mastery of French. The decline of a proper feeling and knowledge of French on the part of the younger generation of pupils is a subject that has deeply concerned French writers and teachers. This aspect of classical study was treated, as will be remembered, by Dean Effinger.[1] "The decline of French," says Emile Faguet,[2] has been parallel with that of Latin, and here the principle *post hoc, ergo propter hoc*, seems to me to be true." Fourth, Greek and Latin are useful, nay indispensable, for developing the literary sense and a standard of taste. In discussing this subject, as frequently elsewhere, Professor Waltzing pays tribute to Professor Kelsey's *Greek and Latin in American Education* by forceful quotations. Fifth, Greek and Latin develop character. Sixth, they are directly necessary for scholars who investigate problems in history, philosophy, religion, literature, and the like, in that no true scholar is ever content with secondary sources. Seventh, they give us our technical vocabulary in all the sciences. And finally, they are useful as an accomplishment in and for themselves, for the adornment of the mind, as the French say.

Professor Waltzing would be the last to affirm that the case of the classics rests upon any one of these arguments. The evidence is cumulative, and the opposition has yet to prove that it is

[1] *School Review*, XX, 401–6.

[2] *Revue des deux mondes*, September 15, 1910.

fundamentally wrong. By the opposition I do not mean the advocates of modern languages: with the thorough acquisition of modern languages I am in entire sympathy. The real opposition to the classics is the cult of the incompetent. In a recent address before the Modern Language Association,[1] Professor Grandgent maintains that the abandonment of the old tradition and the advocation of "all that concerns practical life" has ushered in a period which he aptly calls the "Dark Ages." I draw your attention to that masterly address by the quotation of a characteristic paragraph:[2]

> By this time it may have occurred to some of you that the Dark Age I am discussing is not the period extending from the fifth to the eleventh century, but a much nearer one. I suggest, indeed, that we alter the *Century* definition to something like this: "The Dark Ages, an epoch in the world's history, beginning with or shortly after the French Revolution, marked by a general extension and cheapening of education resulting in a vast increase of self-confident ignorance. It was induced by the gradual triumph of democracy, and will last until the masses, now become arbiters of taste and science, shall have been raised to the level formerly occupied by the privileged classes."

[1] *Proc. Mod. Lang. Assoc.*, 1912.

[2] *Ibid.*, pp. 57–58.

THE CUMULATIVE EXAMINATION IN MATHEMATICS

HARRISON E. WEBB
Central Commercial and Manual Training High School, Newark, New Jersey

Consideration of the comprehensive examination in mathematics has usually encountered the very palpable objection that students are not likely by its means to do themselves justice.

This assertion is to some extent an indictment of present-day methods of teaching, for there can be little question that a comprehensive examination covering three or four years of study is the surest test of the value which a student has received from that study. But few high-school teachers, even granting the impeachment implied in their objection to the comprehensive examination, would, at the present time, be willing to make the passing of such an examination the *sole* criterion of a student's success in mathematics. Too many factors enter into the examination itself. Not the least of these is the general physical and mental condition of the student at the time when the examination is taken. Another is the difficulty of framing a set of questions which will make a reasonable allowance for lapse of memory. A student may readily forget not only theorems and formulae, but in particular cases even proper methods of attack, and still possess a fair knowledge of mathematical principles.

It is, therefore, proposed that the comprehensive (final) examination should not displace the traditional periodical examinations in the various branches of high-school mathematics, but should be *superimposed* upon them. In behalf of the comprehensive examination it is argued that when a student under our present system has passed an examination in algebra, for example, he regards the subject as finished for him. And when, consequently, in geometry or in mechanics, he finds it necessary again to apply algebraic methods, he is pained at the thought of calling up the ghosts of dead ideas. To the serious evils of the "finished subject" any

mathematics teacher, particularly if he has taught the applied branches, can abundantly testify.

But alternatives for the accepted sequence of arithmetic, algebra, plane and solid geometry, and plane trigonometry have met with neither great success nor widespread approval. The reason is not far to seek. The best as well as the poorest of our students organize their knowledge, as they acquire it, largely upon a topical plan. The topical analysis, moreover, of our present mathematical curriculum is not lightly to be cast aside, nor easily to be modified. The arithmetical, the algebraic, the geometrical (Euclidean), and the trigonometrical methods of attacking a problem are usually impressed upon the student's mentality as distinct and separate entities. A mingling of these methods is sure to produce more or less confusion, and the pedagogical problem is to ascertain the extent to which this disadvantage may be offset in point of economy of time, of relative ease of performance, and of immediate applicability, by some arrangement other than the traditional sequence.

To take advantage of this "topical attitude of mind," and at the same time to prepare adequately for a comprehensive final examination, the author submits the plan of a series of cumulative examinations, extending over the three or four years of high-school mathematics. Such examinations, while distinctly charac teristic of the subjects just covered in the classroom, should each offer a considerable opportunity for the application of principles brought to light in the preceding term's work.

It is very true that the subjects above referred to are generally recognized to a large extent as mutually interdependent. But it cannot be lost sight of that geometry held its own for many centuries before formal algebra was developed; that many practical surveyors have pursued their calling with very little use for algebra or geometry or knowledge of those subjects; and that many students who excel in the higher branches of mathematics are woefully weak in the art of numbers. These and other considerations of a similar sort have served to maintain the compartment system of examinations, and corresponding compartments in the classroom. Can a single comprehensive final examination break

down the walls, particularly if examinations in the various branches are kept wholly distinct? It is very doubtful. It is more likely, if the comprehensive college-entrance examinations are widely adopted, that its demands will be met by secondary schools with a special course preparatory for the examination itself.

Such a consequence would be lamentable, mathematical teaching being what it is in America today. Altogether too much time is wasted in a rear-end chase between high schools and colleges along the path of examinations. Papers of years past are subjected to the minutest "higher criticism" by high-school teachers for the benefit of their students. College-entrance examiners, believing that their examinations should be distinctly selective, often meet these efforts by greater intricacy in the problems they present on their question papers. It is not so very long ago that an eastern university distinguished itself by requesting aspiring candidates for the Freshman class to define the locus of a point equidistant from two skew lines!

The writer is informed that in foreign countries, where comprehensive examinations are the rule, special preparatory courses are in order, and are commonly to be found. But even in the Continental educational systems the evil of distinguishing between preparation for examinations and preparation for future work in mathematics has long been felt, and as a result, in recent years, emphasis upon the examination has given place to supplementary work in the various branches of mathematics. It should be remembered also that in Continental schools distinction between the various branches is not closely adhered to, as in America.

If the comprehensive college-entrance examination leads only to more examination bickering, it will do more harm than good. But if it brings high-school teachers throughout the country to a realization of the necessary interdependence of the mathematical branches, all will rise and call it blessed. It is to aid in this happy fruition that the cumulative examination is proposed.

However closely the four branches of high-school mathematics are of necessity interrelated, each has its own particular emphasis. And when these branches are *united*, as in many of the courses entitled first-year mathematics, or second-year, or third-year, the

particular emphasis is generally lost, and essential topical distinctions are in this way lost sight of.

Such distinctions, when essential, are in point of *method*, rather than of subject-matter. *Arithmetic* proceeds from the known to the desired in linear fashion. As generally taught, it shows gradually increased knowledge at each step, and employs a narrowly limited number of principles in a particular instance. *Algebra* applies only a few more principles, and these for the most part in a well-defined succession; but in a particular problem it reserves any increase of knowledge until the final dénouement, the obtaining of the value of the unknown letter. The art of (Euclidean) geometry lies essentially in applying many principles simultaneously, or nearly so, to a particular case. This arises from the *two*-dimensional character of the subject and, in the opinion of the writer, makes it a much harder subject for the student than either arithmetic or relatively difficult algebra. It should follow algebra in point of time, for the sake of the advantage to be gained from the greater maturity of the student. Even trigonometry might well precede geometry, the geometric facts involved being taken for granted. The only really new element which trigonometry offers to the student, if method alone is considered, is the use of the tables.

The disregard of these points of emphasis has been responsible for the failure of various "spiral" or "sandwich" methods of dealing with the high-school mathematical problem. There is little likelihood of their prolonged success anywhere, except in certain courses in "shop mathematics" or "applied mathematics," where method is largely lost sight of in the importance of the result obtained.

But once the principle is accepted that the fundamental distinction between the mathematical subjects is a matter of method, the comprehensive examination may serve a very useful purpose in bringing to the front a phase of mathematical study which for many years has been largely neglected in this country. I refer to mathematics as an applied science, or to its essentially applicative character. The word "applied," when associated with mathematics, is generally interpreted as referring to the material sciences.

It does, of course, so refer, but not absolutely. Each branch of mathematics has its applications in another or more of the *mathematical* branches themselves.

If the four branches, arithmetic, algebra, geometry, and trigonometry, are kept distinct in point of time, emphasis upon distinct methods can easily be preserved, and their relative intensity carefully regarded. But if each of these branches is regarded as a field for the application of those preceding, the whole mathematical curriculum acquires a unity which is genuinely organic, and which makes the comprehensive examination practicable and desirable; and the evil of the "finished subject" is thereby minimized. Added gains are that mechanics may be brought into the mathematical curriculum, where it belongs, and that the student applies his mathematics in the laboratory or shop, because it is his habit to look upon mathematics from that point of view.

Applications may, moreover, be distinctly anticipatory in character without any sacrifice of proper emphasis. A striking example of this is afforded in arithmetic, when this subject is included in the high-school curriculum, as it should be. There is no reason whatever why negative and fractional exponents, as well as the simpler cases of radicals, should not be included in such a course in arithmetic. Considerations of incommensurability, couched in precise language, had best be left to the college, or to the graduate school of a university. But careful attention should be given in arithmetic to the practical significance of various degrees of approximation to the values of radicals, and of π.

Moreover, the methods of teaching arithmetic now in great vogue in grammar schools, relying as they do upon resemblances between problems rather than upon the definite statement of fundamental principles, leave to the high school the formulation of those principles. This is best accomplished by the use of letters, sometimes called "algebraic numbers." Arithmetical operations upon literal expressions are easily comprehended, and the *general* character of such expressions may be strongly impressed upon the student. The construction of formulae is the next step, and the evaluation of formulae is easily understood to represent the application of a general arithmetical principle to a particular case.

The parenthesis and the fraction line may be exploited quite extensively in arithmetic if time permits. Arithmetic may borrow from mechanics such topics as the lever, the wheel and axle, the pulley, and specific gravity. The application of various geometric laws is now quite generally taught in arithmetic under the caption "mensuration." This is distinctly anticipatory.

Algebra properly taught should of course place great emphasis upon the equation. But in high-school courses in algebra a larger proportion of time may well be devoted to a distinct exposition of the manner in which algebra aids in the solution of difficult problems in arithmetic. Skill in computation can be maintained by the frequent assignment of problems the date of which are in terms of large numbers or decimals. The *value* of algebra is nowhere more clearly shown than in the *transformation* of formulae.

Algebra applied to geometric problems may anticipate certain well-known laws of geometric figures in a way which adds greatly to the interest of the subject. If algebra is presented in high school from this point of view, even at the sacrifice of artificial intricacy, it gains greatly in life and tone. An examination paper in algebra, then, can easily be made so as to test the student's arithmetical ability as well as his familiarity with algebraic method.

As the *equation* is distinctive of algebra, so is the *formal demonstration* distinctive of geometry. This method of procedure is too difficult for the first year in high school, and may well be kept for the third year, if the curriculum permits. But geometry affords an excellent field for the application of algebraic methods, in spite of the centuries-old tradition of the inviolability of Euclidean form. The status of twentieth-century geometry teaching is rather dubious. Teachers are well, sometimes too well, aware that the axioms and postulates of Euclid lack the fundamental stability which was formerly ascribed to them (though it is doubtful if Euclid himself was similarly minded toward them). It is known now that the beginnings of the logic of plane geometry lie far back of the first proposition of any standard textbook. The obvious inference, then, is that it might be well to assume a much longer list of postulates and so dispense with many hours of drudgery spent in the mastery of propositions which are practically self-

evident to the student. This step once taken affords an opportunity for even greater precision in the definition of terms and in regard for the logical sequence of the parts of the subject, with time to spare.

How shall this time be spent? The answer is immediate: in original exercises. It is the *character* of these exercises which has the greatest interest for mathematical teachers nowadays. It was perfectly natural, of course, that the first of these exercises to be placed before the students should have the character of additional theorems in *Euclid*. Overlooking the fact that Euclid regarded the *sequence* of the theorems as of equal, if not of greater, importance than the manner of the particular demonstration, teachers have inflicted these "riders" mercilessly upon their classes, making theorems and problems more and more intricate, without regard to their proper arrangement, until geometry is frequently reduced to little more than a puzzle book.

Now the complete abandoning of Euclidean method, which seems to many a desirable step, is at least a bold one, considering the twenty-three hundred years during which Euclid has held sway. It may well be asked whether every student should not become familiar with plane geometry as the most marvelous example of human logic ever set forth, so wonderful that Plato regarded it as divine. But two facts should not be overlooked. One is that, in imposing upon demonstrative geometry the modern scientific mania for classification by means of external appearance, we have already damaged the beautiful structure of Euclid very seriously; and the second is that the nicety of argument so characteristic of Euclid always seems to a student a waste of good time, coming as it does *between* the comparatively slipshod methods of arithmetic and algebra, and the immense sweep of college mathematics.

This solution of the difficulty is offered: that the propositions presented should be manipulated with traditional care; but that their number should be reduced to a minimum; that the time thus saved should be devoted to algebraic exercises based on these theorems, as they come, with numerous examples involving considerable computation; and that the final examination in geometry

should demand all three of the distinct methods thus brought into the course.

There is, of course, no logic whatever in the separation of solid and plane geometry. This is done merely because the combined course is too long for one school year. Solid geometry should therefore be treated, under the proposed plan, as plane geometry is treated.

It should be noted, moreover, that many familiar theorems of geometry are in their demonstration closely associated with algebra. These theorems, usually grouped under the heading "numerical properties of triangles," are established much more easily under the form of algebra than under the traditional Euclidean notation. The problem of the determination of the "Golden Section" and that for the approximate computation of π afford admirable illustrations of the application of the principles of quadratic equations. The transformation of a square into a rectangle under given dimensional relations offers a striking comparison of algebraic and geometric methods; and the association of algebraic graphs with geometric loci, as well as that of trigonometric functions with similar right triangles, brings algebra and geometry into direct relation. The algebraic proof of Hero's formula deserves more attention that it usually gets.

The subject of trigonometry is especially significant to the present discussion in that it affords in itself a striking illustration of the way in which the whole high-school course might well be presented. Here arithmetic, algebra, and geometry are all used freely and without prejudice as to their comparative merits. It is the opinion of the writer that trigonometry is fitly the apex of the high-school course; and it is his experience that students who take this subject find it the most satisfying of all of their high-school mathematics. It seems unfortunate that not more than a half-year can usually be devoted to this valuable work. If it were extended on the one hand to include De Moivre's theorem, and on the other to include a wide range of practical applications, there would be little of the preparatory mathematics which it would not exemplify.

It is undeniable that such methods as have been suggested,

though vastly more interesting, would be somewhat more difficult for the student than the present manner, and would require correspondingly greater skill on the part of the teacher. The percentage of students' failures might increase somewhat at first. But the writer contends that this is a part of the cost of the Comprehensive Examination.

Suggested Questions for Cumulative Examination Papers
Algebra through progressions

1. Show that a number is divisible by three if the sum of its digits is divisible by three.

2. Given

$$k=\frac{l_1-l_0}{l_0(t_1-t_0)}.$$

Solve for l_0.

Find l_0 when $l_1=39.27$, $t_1=99.6$, $t_0=0.4$, $k=.000011$.

3. Find by a short method the value of each of the following

a) $(38\frac{3}{4})^2-(17\frac{1}{4})^2$.

b) $\sqrt{363}-3\sqrt{\frac{1}{3}}-5\sqrt[4]{9}$.

c) $\sqrt{h(2r+h)}$, where $r=4000$, $h=\frac{1}{10}$.

(Obtain results correct to the second decimal place.)

4. Derive a general formula for obtaining the principal which will amount to a given sum at a given rate in a given time, at simple interest. And find the principal when the time is sixty-four days, the rate 4 per cent, and the amount $1,540.

5. Find the dimensions, the volume, and the diagonal of a rectangular solid if three faces about one corner have areas of 108 sq. ft., 264 sq. ft., and 198 sq. ft., respectively.

6. If $y=a+\frac{b}{c+x}$, find a, b, and c, if $y=41$ when $x=6$, $y=31.91$ when $x=2.1$, and $y=26.45$ when $x=5.4$.

7. A man pays an annual premium of $164.37 for 20 years on an endowment life insurance policy. What should be his credit with the insurance company, allowing simple interest at 4 per cent on his payments but disregarding insurance cost?

8. At each stroke an air pump withdraws one-tenth of the total quantity of air under a bell jar. If there were 400 cubic inches of air under the bell jar originally, what portion of the original contents remains after eight strokes?

PLANE GEOMETRY

1. Find the number of degrees, minutes, and seconds in each angle of a triangle if the angles are in the ratio of 1, 5, and 7.

2. Prove a law for the sum of the interior angles of a polygon of n sides, and find the value in degrees, minutes, and seconds of each angle of a regular polygon of 48 sides.

3. Illustrate geometrically the algebraic product of $a+b$ and $a-b$ where a and b are lines.

4. Derive a general formula for the number of degrees in the arcs intercepted by (1) two tangents to a circle which make with each other an angle of $a°$; (2) the three sides of an inscribed isosceles triangle whose vertex angle is $b°$.

5. Show how to divide a line in extreme and mean ratio, prove your construction, and find correct to three decimal places the value of the greater segment if the length of the whole line is 10 units.

6. Find the area of a trapezoid if the bases are 15 and 20, and the legs are 29 and 30. State the geometric theorems involved in the solution of this problem.

7. Construct three mutually tangent circles, having given their three lines of centers; and find the diameters of three such circles, if their lines of centers are respectively 4, 5, and 6 inches.

8. Prove that the areas of two similar triangles are proportional to the squares of homologous lines, and find the distance from the vertex of a line drawn parallel to the base of a triangle of altitude 20 which divides the triangle in the ratio of 3:5.

EDUCATIONAL NEWS AND EDITORIAL COMMENT

The department of Educational News and Editorial Comment was begun in the December, 1912, number of the *Review*. Dr. Charles H. Judd, in a signed note announced "this department will be conducted, unless otherwise specifically indicated, by the writer of this note."

The *Review* desires to announce that Dr. Judd will continue to contribute extensively to the department. To his comments there will be added the contributions of the other editors. Moreover suggestions as to suitable news items, sent by anyone interested in current educational problems, will be heartily welcomed. Space will be reserved in addition for appropriate comments and discussions signed by contributors. The *Review* again expresses the hope that through this department there may be stimulated helpful discussions in regard to educational movements of the day. All communications should be addressed to the managing editor, Room 206, Emmons Blaine Hall, University of Chicago.

R. L. LYMAN

REORGANIZATION OF THE DETROIT CENTRAL HIGH SCHOOL

In an effort to provide adequately for the complicated needs of 2,500 pupils, Detroit has this year made radical changes in the organization of the Central High School. The most important innovations are two in number. First, the boys and girls will recite in different classes. This plan seems to be based upon the arguments usually given for segregation. The outcome of segregation in a public high school will be watched with interest by many principals who are restive under the petty but irritating happenings of coeducation.

The second change is even more radical. Instead of an assembly room for each grade as heretofore, the entire school will be divided into "houses," each house containing pupils from all four grades. Twice a year an incoming class of five hundred will be distributed among the various houses. Each house principal will then deal with only sixty to seventy newcomers. Moreover, the first-year pupils will be in touch with schoolmates from all grades. It is hoped in this way that the pupils may get the perspective of the entire course and the spirit of the whole school. The house plan seems to be an experiment in the high

school somewhat similar in aim to the "tutorial groups" now being tried in various colleges.

The Central High School appreciates that these new plans will require patience, care, and decision on the part of the faculty. There is no doubt that Detroit Central, always a leader among metropolitan high schools, will give to these innovations a thorough trial. The plan ought to stimulate individual students, raise industry and scholarship, and increase the number who endure to the end.

THE ADMINISTRATION OF VOCATIONAL SCHOOLS

It is generally admitted that one of the most important questions regarding the vocational education movement now under consideration is whether such education shall be provided by a separately organized system of schools, administered by a different staff of officers acting under authority granted by special legislation, or whether the scope and purpose of the present public educational system shall be so widened as to minister to the educational needs of all citizens by the addition of new departments, and the development of a more complex and highly differentiated organization.

It is within the bounds of truth to say that, while this question has become acute in only a few states, it is of national importance. Indications are not wanting to show that a strongly developed movement is under way throughout the country to secure, wherever possible, the establishment of the separate system. In fact, while we are not able to estimate its strength, there is no doubt that opposition was developed against the Page Vocational Education Bill, in some quarters, because it was felt that it tended too strongly toward the separate school. We say this although we do not concur in this opinion and have always supported the Page measure.

In view of the above facts we are led to comment on the following resolutions prepared by one hundred officers, superintendents, and teachers assembled in the First Institute and Conference for Continuation Schools, Madison, September 22, 1913.

To Whom It May Concern:

WHEREAS, There has been more or less irresponsible utterance within and without the state with reference to the satisfaction and efficiency of the law that provides for continuation schools for the self-supporting wage-earners of the state of Wisconsin, and

WHEREAS, It is desirable once and for all to state what are the facts with reference to this matter, and

WHEREAS, It seems reasonable that a representative body consisting of

school officers, superintendents, and continuation teachers, from all of the cities of Wisconsin maintaining such schools, are wholly familiar with conditions that exist, and

WHEREAS, It is becoming for such a gathering to declare what the conditions are, therefore be it

Resolved by the one hundred fifty officers, superintendents, and teachers assembled in the First Institute and Conference for Continuation Schools, that—

"We find on the whole that the duplex system, or two boards, is advantageous to the administration of both lines of school work—generalized school work and specialized school work."

Resolutions passed enthusiastically by unanimous standing vote.

C. P. CARY
State Superintendent
Presiding Officer

M. J. NORRIS, *Secretary*

While every true friend of popular education will rejoice at the success of Wisconsin's effort to inaugurate a state-wide system of vocational education, there is danger that this enthusiastic indorsement of the Wisconsin plan by Wisconsin teachers will be urged by some as conclusive proof of the superiority of the separate system referred to above. No greater mistake could be made than to put such construction on these "resolutions."

In the first place it should be noted that, by the terms of the resolutions, Wisconsin's purpose has been to provide "continuation schools for the self-supporting wage-earners of the state." Important as this phase of vocational education may be, the establishment of continuation schools is a relatively simple matter compared to the carrying-out of the programs of such states as Massachusetts, New York, New Jersey, Pennsylvania, and Indiana, or even the realization of the plans proposed for Illinois. In these states, in addition to continuation schools, the plans contemplate full-time day schools, complete vocational departments in existing high schools, a liberal utilization of the part-time co-operative scheme involving agreements between employers and the existing schools, some of which plans reach well down into the compulsory school period. In no one of these states is it necessary for the young citizen to become a "self-supporting wage-earner" before he can receive the benefit of state-aided vocational education. We would in nowise minimize the inestimable value of the continuation school, but we must insist that a plan of state administration which proves eminently satisfactory for the establishment of such schools might be ineffectual in promoting some of the other and more complex types of vocational education.

In the second place it should be recalled that what is referred to in the resolutions as the "duplex system" is not necessarily the same as the "separate system" so forcefully advocated in some quarters. As the industrial school board in any Wisconsin city is appointed by the regular school board, and as its members may be, and in many instances actually are, the same men and women as constitute the school board, there is sure to be a unity of interest which may not result from, and certainly is not invited by, the plan of a separate board appointed by the mayor or other high authority.

What is gained by the Wisconsin plan is a separate budget and freedom from the restraints of old, conservative, and inappropriate rules and regulations. Both these highly desirable advantages might, under proper legislation, be secured to a subcommittee of any existing school board in the land. On the other hand, friction and duplication of effort, which are unavoidable under the duplex system, would be eliminated by retaining the single administrative authority. That such friction has been felt in Wisconsin cannot successfully be disputed.

In the third place may we not overestimate the importance of the opinions expressed in these resolutions? It should be remembered that we have here the expression of a group of men the large majority of whom have had no opportunity whatever to observe the working of any other plan than the one under discussion. Their statement is that they find the plan good, and everyone will heartily agree with them. That the plan is *better* than some other, or that it is the *best possible plan*, they have not said nor are they competent to judge since their experience is limited to the "duplex system" which has been in operation two years or less. Under the circumstances one can hardly imagine how the resolutions could have been passed in any other way than "enthusiastically by unanimous vote."

After all, it is a question of relative values in which we are interested. No advocate of the "unified system" has denied that the dual system has advantages, and most are willing to admit that greater *immediate* success for the new movement would probably be achieved if it were possible to eliminate all traditional pedagogical restraints and limitations. But it cannot be said too often or too emphatically that the greatest value of the vocational education movement will be its ultimate effect on the general system of public schools. Even today it is to be noted that in those places where both types of education are administered by the same school board a vitality has been observed in the older schools which is full of promise that the much-needed educational reorganization is near at hand.

F. H. L.

STATE CERTIFICATES FOR PROFESSIONALLY TRAINED COLLEGE GRADUATES

According to Updegraff's *Bulletin* (Bureau of Education, No. 465) issued in 1911, a large number of states then placed a special premium upon professionally trained college graduates by granting them certificates to teach without requiring an examination or previous experience in teaching. Most of these states were in the central or western part of the country. While it is difficult to determine the exact practice in all states from the data provided, it would appear that the following twenty-seven were included in those which granted certificates upon the basis mentioned.

Atlantic Coast States: New York, Pennsylvania, Rhode Island, West Virginia.

South Central: Arkansas, Kentucky, Louisiana, Tennessee, and Texas.

North Central: Iowa, Kansas, Michigan, Minnesota, Nebraska, North Dakota, South Dakota, Wisconsin.

Western: Arizona, California, Colorado, Idaho, Montana, New Mexico, Oregon, Utah, Washington, Wyoming.

These facts indicate that in these states the public authorities consider college training, which has included professional work in departments of education, especially important in employing teachers. In some states many of the boards of education will not employ a teacher unless he has had professional training, and preference is very generally given to candidates with professional training, even where it is not required. The result is that in many of the states practically all of the students in the universities who expect to teach take the required amount of work in the department of education as a matter of course.

The amount of professional work required for certificates varies from about 6 to about 20 semester hours. The most common requirement is 15 semester hours. The subjects to be included in the training vary with different states. The following are mentioned: general and educational psychology, history of education, school organization, administration and management, European school systems, methods, observation, practice teaching.

In contrast with the advanced recognition of professional training which prevails in the states listed above, there are still a number of states in which no recognition is given. In some states, in fact, there is no central scheme of state certification, but county certificates based on examinations set by county authorities are still required. Probably a number of states, however, have taken advanced steps since the publication of Updegraff's report. One example is Illinois, which, in 1911, had a very antiquated scheme of county examinations for teachers without

experience, and state examinations for teachers with experience and with no provision for granting certificates without examination to professionally trained college graduates. The state legislature in 1913, however, took a long step forward by passing a bill which provides for the granting of interchangeable county certificates without examination or previous experience to graduates of normal schools and colleges. In the case of high-school certificates the law reads as follows: "*Provided, however*, that graduates of a recognized normal school, college, or university may offer, within three years after graduation, certified credits in lieu of examination in the above subjects accompanied by faculty recommendations of ability to teach in high school." The law is indefinite in its prescriptions and will doubtless be improved so as to define more specifically the amount and character of the professional work required, as is done in Colorado, Iowa, Minnesota, North Dakota, Oregon, Wisconsin, and some other states. The baneful influence of special local interests, which has so generally retarded the development of education in states bordering on the Ohio River, is shown in the provision in the Illinois law "that nothing in this act relating to county certificates shall be applicable to counties having a population of five hundred thousand or over."

S. C. P.

RESPONSIBILITY FOR PUPILS ON THE RAGGED EDGE

From an interesting investigation reported in the current number of the *School Review*, C. R. Rounds and H. B. Kingsbury find that approximately 20 per cent of high-school pupils fail in English and 25 per cent fail in mathematics. The investigators reach the conclusion that those high schools are making the best showing which are employing some special method or methods of helping backward pupils. They especially affirm that "one factor must constantly be brought into the reckoning and that is the teacher behind the desk."

It is well to have the point thus emphasized that the teacher's responsibility is greatest with those of his pupils who hover around the ragged edge. Moreover, it is to be remembered that the fate of this group of doubtful ones, just above or just below the passing mark, is largely determined by the teacher himself. This can be illustrated easily in the courses in English, history, or language. In these classes the teacher is compelled to rely in a large degree upon general impressions of the pupil's work in estimating what grade he ought to give. Say that a class has been working on *Macbeth*. John Jones is on the ragged edge. If given a mark of 74 he will fail; if given 75 he will pass.

The teacher has been irritated perhaps by John Jones, who is sometimes late with his written work; or maybe the instructor is especially kind-hearted toward the lad because of his clean, gentlemanly bearing or something of the sort. Indeed, a dozen considerations other than the real merits of John Jones in the study of *Macbeth* may determine in the teacher's mind the difference in grade between 74 and 75. It is because of this margin of judgment on the part of the teacher that he needs to exercise great care in dealing with the pupils whose records lie near the passing mark.

We have known teachers obsessed by the error against which Mr. Rounds and Mr. Kingsbury give warning: namely, that excellence in teaching can be estimated by the relatively large number of low marks an instructor gives. Such teachers sometimes deliberately look over their class lists to find those of their doubtful pupils whom they can fail with the least inconvenience to themselves. Some teachers consult the records of pupils in other courses on the theory that if the pupil has failed in one course it will be all right to fail him or almost fail him in another. As a matter of fact, if a pupil is doing mediocre work in all his other courses he is the very one whom the teacher ought to study with great care, to see if it is not possible through his own classes to give the lad a stimulus to do better in all his other work.

There is, moreover, a real danger if a principal attempts to bring pressure on his teachers to let more pupils pass. If there are 25 per cent of failures in mathematics it is relatively easy to reduce that percentage to 15 per cent through vigorous advice given by the principal. But this easy method of making a better showing may in no way mean that mathematics is better taught or that backward pupils are being more effectively assisted. The danger is that it may mean merely that the individual teachers are easing up in their judgments, that they are becoming too lenient. The principal can guard against this danger by urging his teachers to give heartier personal assistance to that group of pupils who will always hover about the ragged edge.

A safe rule for any teacher to follow when dealing with mediocre pupils is to remember that in the high school, at least, it is far better to err toward leniency rather than toward severity; it is far better to keep a boy in school with a mark of 75 in Sophomore English than it is to drive him out of school with a mark of 74 in the same course.

DEPARTMENT OF SUPERINTENDENCE

The next meeting of the Department of Superintendence will be held at Richmond, Va., February 23–28, 1914. The headquarters'

hotel will be the "Jefferson." The evening meetings of a general character will be held in the City Auditorium, which has a seating capacity of 4,000. The general day meetings will be held in the High School Auditorium, seating 1,300 people.

The "Jefferson" is located about midway between the business center and the City Auditorium. The high school is located one block off Broad Street, the chief retail street. The Murray Hotel and the Hotel Richmond are only two blocks from the high school.

COMMITTEE FOR EDUCATIONAL CONGRESS AT EXPOSITION

Dr. Joseph Swain, president of Swarthmore College, and president of the National Education Association, today announced the names of ten men who will complete the committee which will have general charge of organizing a special educational congress at the Panama-Pacific Exposition in 1915. Besides all former presidents of the National Education Association, past and present United States commissioners of education, the executive committee of the association, *ex officio*, the ten other active members appointed by Dr. Swain are: Stratton D. Brooks, president of the University of Oklahoma; Martin G. Brumbaugh, superintendent of schools, Philadelphia; John W. Cravens, registrar, Indiana University; David C. Johnston, Winthrop Normal and Industrial School, Rock Hill, N.C.; Charles H. Keyes, president of Skidmore School of Arts, Saratoga Springs, N.Y.; A. C. Nelson, of Skidmore School of Arts, Saratoga Springs, N.Y.; A. C. Nelson, state superintendent of public instruction, Salt Lake City; J. P. Phillips, superintendent of schools, Birmingham, Ala.; Henry S. Pritchett, president of Carnegie Foundation, New York City; Frank Strong, chancellor of the University of Kansas; Benjamin Ide Wheeler, president of the University of California.

HIGH-SCHOOL CREDIT FOR MUSIC STUDY

A bulletin issued by J. W. Shideler, superintendent of the Junction City, Kansas, Public Schools, announces that high-school pupils taking music outside of school are given credit. One unit a year is granted on the basis of thirty-two credits for graduation. The requirements are as follows:

1. For instrumental music (piano), the following points will be emphasized: (*a*) bodily poise—position of hands, (*b*) correct rhythm, (*c*) tone coloring, (*d*) correct pedaling, (*e*) phrasing, (*f*) expression. (Violin) omit latter part of (*a*) and (*d*) and substitute correct handling of bow.

2. For voice culture: (*a*) vocal poise, (*b*) tone quality, (*c*) tone placement, (*d*) articulation, (*e*) pronunciation, (*f*) smoothness of vocalization, (*g*) phrasing, (*h*) expression, (*i*) interpretation.

3. Application for such credit must be made by parent and must be accompanied by written recommendation of private teacher.

4. No pupil will be accepted who takes fewer than one lesson a week and practices fewer than six hours a week.

5. The teacher must report to the superintendent the first of the following months: October, December, February, April, and May 15, the character and grade of the work, the progress made by the pupil since the preceding report, and the compositions studied with remarks concerning the scope and quality of the work done on each composition. The teacher will report a grade in per cent on the basis of 75 per cent for passing work. These reports are to be made in duplicate, one signed and one unsigned.

6. The parent will report to the superintendent the first of every month the number of hours of practice of the pupil.

7. The pupil will be required to pass an examination at the close of the year, under a board of examiners appointed by the superintendent. The examination will be planned on the basis of the unsigned reports of the teacher.

This experiment, safeguarded as it is by careful provisions against lax endeavor by the pupils, seems to be a sensible means of preventing the risk of overworking on the one hand and on the other of postponing musical training until too late. A serious and thorough study of either vocal or instrumental music is today recognized as a valuable part of education. The schools do well to encourage it in every legitimate way.

THE RAPID GROWTH OF NIGHT SCHOOLS

The public press gives evidence that the spread of night high schools and grammar schools has this year been unprecedented. The courses of such schools in general fall into three large groups: first, in cities of large foreign population, teaching English chiefly to adults; second, helping boys and girls who have left school before finishing their regular courses; and, third, offering practical instruction in commercial branches, household arts, and manual training. A fourth group of courses is designed to give students assistance in mastering a trade. The movement for the night school in any or all of its branches is but part of an increasingly intelligent endeavor to make school equipment serve communities as widely as possible. If a $100,000 manufacturing plant can run at night with a second force of operatives, a costly educational

plant certainly ought not to be idle when there is crude material to be turned into finished product.

From a very large number of press notices the following are selected as indicative of the general trend of the development in night schools. Rochester, N.Y., reports 185 courses, half of which are new this year, given in thirteen evening schools. In Kansas City, Mo., an interesting innovation is made by a night course in practical gardening for beginners given in the Central High School. "Such subjects as soil chemistry are allowed to wait awhile," says the principal. "What we aim at is to enable any householder with a little tract of ground to raise the maximum amount of vegetables and thus reduce the cost of living. In the same rudimentary, practical way we will teach flower gardening." In Cincinnati the courses in the night high schools lead directly to diplomas recognized by the University of Cincinnati and by various colleges. These courses are given in addition to the regular classes in manual training, domestic science, and commercial branches. In Omaha three night high schools open their doors with various elementary schools assisting. Omaha grants diplomas for efficiency. Denver and Pittsburgh announce plans for wide enlargements. In the latter city the school authorities undertake to establish new centers wherever requests are made and an attendance of one hundred guaranteed. Des Moines, which established five years ago one of the earliest night schools in the West, this year is introducing co-operation with the Y.M.C.A. and business colleges of the city. In order to keep the night work distinct the various agencies, however, co-operate in an advertising campaign. Detroit enrols 5,000 pupils and has 130 instructors working in twelve buildings. The regular high-school studies are given in four buildings, while grade schools are open for foreigners. In Detroit the various nationalities are being segregated. Groups of Germans, Hebrews, Italians, Greeks, Poles, Hungarians, whose members have similar problems in the learning of English are being taught together. In Chicago thirty-three buildings this year are open for night-school work. The classes meet four nights a week. Last year in the Chicago night schools 10,500 attended the commercial, industrial, and household courses, 11,200 foreigners studied English, a total of 27,900 students attending the Chicago evening schools. In this city a registration fee of one dollar charged at the beginning of the work is returned to those who attend three-fourths of the total number of sessions.

BOOK REVIEWS

Applied Physics. By V. D. HAWKINS. New York: Longmans, Green & Co., 1912. Pp. ix+199.

A comprehensive book, one in which the author has kept aloof from the erg, dyne, and other terms which do not particularly help the "average" high-school pupil and coupled the book and student to the common, everyday phenomena of life. It is a book in which one will become interested because he is brought in touch, quickly, with those fundamental principles of physics which have already arrested his attention. The author does not claim to have covered all the physics ground in this text, but has left to the live, well-informed instructor that interesting and helpful phase of the subject, the illustrative experiment.

Physical Laboratory Guide. By FREDERICK C. REEVE. New York: American Book Co., 1913. Pp. x+182. $0.60.

In this guide there are twelve chapters, nine being devoted to a very complete discussion of the sixty-six experiments, the other three containing notes on the experiments and having a very complete list of physical constants used in the book; the experiments are well selected and cover the requirements for entrance to college. The directions for performing each experiment are clear and complete, thus economizing the time of both teacher and pupil. A most valuable feature is the scattering of many questions throughout the book, the answering of which will help fix in the pupil's mind the principles brought out in the experiments. The book can be used with any good physics text. There are but sixteen drawings; more would have been helpful to the pupil. The composition and press work are excellent and the mechanical work equally good.

New Analytic Geometry. By PERCY F. SMITH and ARTHUR S. GALE. Boston: Ginn & Co., 1912. Pp. x+342. $1.50.

Higher Algebra. By HERBERT E. HAWKES. Boston: Ginn & Co., 1913. Pp. v+222. $1.40.

Elementary Plane Geometry. By JOHN C. STONE and JAMES F. MILLIS. Boston: Benj. H. Sanborn & Co., 1910. Pp. ix+252. $0.75.

Though the *New Analytic Geometry* is planned to provide an adequate drill in the use of co-ordinates and in the employment of analytic methods, it meets in many respects the requirements for a good practical course. The

five forms of the equation of the straight line are derived in a way to be easily grasped by the student, and there is an abundance of problems for drill. However, it is a simple matter to show the students that only one form, $y=mx+b$, is really needed to solve all the problems. It seems a waste of time to plot many curves of the second degree by locating points, when the curves can be readily sketched after their properties have been studied.

The chapters on transcendental curves and equations, polar co-ordinates, and parametric equations and loci are of considerable value for reference, and as far as time permits in a short course they furnish good material for work. It is so difficult to find practical problems having a real connection with analytic geometry that the chapter on functions and graphs is very welcome. These problems, moreover, serve as an excellent introduction to the calculus. There is no trouble in having students find tangents to curves by the $\frac{dy}{dx}$ method, and immediately make application in finding maximum and minimum values.

The derivation of the equations of the conic sections by using a separate definition for each curve is undoubtedly the easiest for the student; and in following this plan and giving an excellent discussion of the properties of the curves and in giving the methods of mechanical construction the authors are to be commended.

Solid analytic geometry occupies eighty-seven pages, and the presentation is adequate for use in the calculus. The chapter on empirical equations at the close of the book should not be overlooked by an instructor. This subject is just beginning to receive the attention it deserves.

The *Higher Algebra* covers the ground of the usual course in college algebra, and is amply sufficient for future work in engineering and science. An introductory review prepares for the work that follows. The second chapter, Functions and Graphs, treats the subject in a very practical way and furnishes the basis for considerable graphical work in the later chapters. The quadratic equation is treated with considerable thoroughness, and complex numbers are given a more extensive discussion than most textbooks accord them.

The treatment of the theory of equations is noteworthy because of the omission of unimportant details, the clear presentation of the essential principles, and the use of graphical methods. Instead of a long chapter on undetermined coefficients the one important topic, partial fractions, is given. It is doubtful if the average student knows much about infinite series after a study of the subject; but it would seem possible for him to get a fairly good grasp of the subject from this book. The explanations and illustrations are clear and convincing, and only the simplest cases are considered. This textbook will, no doubt, have a wide use in colleges and technical schools.

The Stone-Millis *Plane Geometry* is one of the best geometry texts of recent years. For the most part complete proofs are not given, but enough suggestions are made to enable the pupil to complete the proof for himself. This gives ample drill in solving original exercises and leaves much time for the

applied problems. Teachers who desire the traditional original exercises will find plenty of them, but of greater value are the many simple problems of geometry that have been gathered from the various practical fields of daily life. These applied problems awaken the interest of the pupils in the study of geometry, and supply the motive for effective study.

In the early pages formal demonstrations are not attempted but a concrete basis is first obtained through measurements, constructions, and the like. These drawings and constructions are made not alone with the Euclidean ruler and compasses; the pupils learn to use the protractor and triangle as in practical work. Quite a number of geometrical exercises are given for algebraic solution, in order to keep alive the pupils' knowledge of algebra; and as an application of similar triangles, angle functions are introduced and used to compute heights and distances. In many ways this book meets the present-day demands for methods of instruction which will prepare pupils for their work after leaving school.

H. E. COBB

LEWIS INSTITUTE
CHICAGO

A Laboratory Manual for Physical and Commercial Geography. By R. S. TARR and O. D. VON ENGELN. New York: Macmillan, 1913. Pp. vii+214. $0.25.

A Guide for Laboratory Geography Teaching. By O. D. VON ENGELN. New York: Macmillan, 1913. Pp. iii+20.

These publications are auxiliary to the *New Physical Geography* recently published by Professor Tarr. They are designed to encourage and make possible the use of the laboratory method in the study of geography in normal schools and colleges. The *Guide* is for the use of teachers, explaining questions arising in the use of the *Manual.* The *Manual* contains fifty-six exercises covering a large range of geographical topics grouped under six heads: the world as a whole, in which instruction is given in map-making; minerals, rocks, and soil; the making and interpretation of topographic maps; the geography of the lands; the ocean; and the atmosphere. The apparatus required for these exercises is carefully described, and is comparatively simple. The cost is estimated as between a minimum of $40 and a maximum of $115 for a class of ten students. There is no doubt as to the skill with which the exercises have been arranged, and the comprehensive understanding of the subject upon which they are based. It is probable that the individual experience of the authors has given them their shape, and that other teachers might find themselves somewhat cramped by the mass of suggestion and the rigidity of the form, but it is not probable that at the present time many people in the country have worked out a system by any means as comprehensive, and doubtless these publications will do much to call attention to the possibilities of laboratory

method and to encourage others, if not to use the particular manuals, at any rate to undertake similar experiments. The *Manual* is much more accurately described by the word "physical" than "commercial." In fact, the reviewer was unable to see that the scientific study of the physical geography had been made anywhere to yield to requirements of commercial use. In other words, the geography taught by this method would furnish a basis for the understanding of commercial conditions as related to geography; but the commercial conditions seem not to be independently treated. It should be mentioned that, while the exercises include the world, special attention is given to the United States, all of whose geographic units are made the basis of special study.

In conclusion, the reviewer would say that all teachers of geography in normal schools and colleges should become acquainted with these manuals, as, whether they use them or not, they cannot fail to find many practical and stimulating suggestions.

CARL RUSSELL FISH

UNIVERSITY OF WISCONSIN

Medical Inspection of Schools. By LUTHER HALSEY GULICK and LEONARD P. AYRES. Pp. xx+224. $1.50.

Medical Inspection of Schools, by Gulick and Ayres, made its first appearance in October, 1908, and that it filled a demand is guaranteed by the necessity of reprinting it in January, 1909, and again in December of the same year. Such remarkable advances had been made in five years that the authors very wisely decided to write an almost entirely new book under the same title and covering the same ground, rather than issue a fourth reprint of the somewhat out-of-date material.

Progress in the field of medical inspection of schools in America is noted along three main lines: (1) the increased number of states that have made inspection mandatory or permissive; (2) the extension of the scope of the work, which was at first inaugurated for and confined to the inspection of contagious diseases, to include the examination and supervision of non-communicable physical defects and unhygienic school environment; (3) the growing conviction that inspection of the physical condition of pupils is in the largest sense an educational concern, that each child must be developed for his own sake, as well as protected from others, and that perforce for this reason every feature of the work, except that which is concerned with contagious diseases, should be controlled by boards of education.

The subject-matter is treated under the following chapter headings: "The Argument for Medical Inspection"; "History and Present Status"; "Inspection for the Detection of Contagious Diseases"; "Physical Examinations"; "The School Nurse"; "Making Medical Inspection Effective"; "Results"; "Per Capita Cost and Salaries"; "Dental Inspection"; "Con-

trolling Authorities in American Municipalities"; "Physical Defects and School Progress"; "Legal Provisions."

In this new form one notes that special emphasis is given to the excellent work of dental inspection and that the topic of the relation of physical defects and school progress is more conservatively handled than in its original presentation. Excellent illustrations of examiners at work and selected specimens of good working blank forms for the records of examiners are printed and add much to the value of the book. In its present altogether presentable form this book represents a valuable summary of the status of medical inspection of schools at the present time, and an indispensable source of authority for guidance in the installation of the best schemes where hygienic supervision has not received sufficient attention, or for the reorganization and correction of unworkable and unsatisfactory programs for caring for diseased and physically defective children. It is a distinct contribution to this worthy propaganda.

D. P. MACMILLAN

DEPARTMENT OF CHILD-STUDY AND EDUCATIONAL RESEARCH
CHICAGO PUBLIC SCHOOLS

American Poems. Selected and edited by WALTER C. BRONSON. Chicago: The University of Chicago Press, 1912. Pp. v+669. $1.00 net. Postpaid, $1.15.

This volume is intended "for use in schools and colleges" and for individual readers who wish "to become acquainted at first hand with the whole field of American poetry." The selections extend from William Morrell's "New England" (1625) through the whole list of American poets, near poets, and verse-writers, down to Emily Dickinson's "Simplicity" (1892). In all, seventy writers are listed in the index, and, in addition, the volume contains the verses of a dozen anonymous poets. About 300 pieces fill the 356 pages; 40 pages are given to Barlow and Freneau, 260 to the group of great nineteenth-century poets, and 50 to Whitman and Lanier; somewhat less than 200 pages remain for the other 75 writers.

Thus do comparatively unknown poets rub shoulders with masters. Indeed, the editor frankly affirms that "the space allotted to individual authors is not determined wholly by poetical merit. . . . . Trumble, Barlow, and Freneau, for example, are each given more pages than Holmes, not because they are better poets, but because their works are less accessible."

Accessibility as an important principle of selection has given the volume both its weakness and its strength. An unavoidable shortcoming lies in the fact that at least fifty or sixty of the eighty-odd authors are comparatively mediocre. Their verses are perhaps good enough to serve as an appropriate setting for the few gems of American poetry. By the principle of contrast even a gold setting is dull when compared with the jewel; so "The Day of

Doom" may be excused on the principle of contrast for appearing under the same covers with the masterpieces of Lowell and Longfellow.

To put such a volume, in which the excellent is mingled with the indifferent, in the hands of undiscriminating high-school pupils has many obvious dangers. Teachers of literature in secondary schools, except perhaps for the rare Senior classes making intensive study of American literature, will hardly adopt Professor Bronson's book as a text. As a reference book it ought to be upon the shelves of every secondary-school library. For the individual reader who wishes to have a taste of all our poets, the volume will prove invaluable. It to be hoped, however, that general readers will continue to read Longfellow and the rest, not from compilations, however excellent, but from complete editions of these poets.

That which constitutes the volume's shortcoming for general readers is its strength for college classes. It is well for the college student to get the flavor of an old musty poem out of a musty old book; but for this few college libraries are adequate. The editor of *American Poems* has presented many selections not otherwise accessible. Moreover, the chronological order of presenting the works of various authors renders the book serviceable for classes in the history of literature. Professor Bronson has wisely avoided the presentation of fragments; a large majority of the selections are complete poems. Finally he has enriched his work by 100 pages of valuable notes and an elaborate bibliography, both of which college teachers of American literature will find useful.

R. L. LYMAN

UNIVERSITY OF WISCONSIN

BOOKS RECEIVED

EDUCATION

Hoole, Charles. A New Discovery of the Old Art of Teaching School. Syracuse, N.Y.: C. W. Barden, 1912. Pp. xxxvii+36. $3.00.

Hummel, William G. Materials and Methods in High School Agriculture. New York: Macmillan, 1913. Pp. xv+385. $1.25.

Meumann, E. Psychology of Learning. New York: D. Appleton & Co., 1913. Pp. xix+393.

HEALTH AND HYGIENE

Bryant, L. S. School Feeding. Lippincott. Pp. +345.

Burks, Francis W., and Jessie D. Health and the School. Appleton & Co., 1913. Pp. xviii+393.

Coleman, Walter M. The People's Health. New York: Macmillan, 1913. Pp. xv+307. $0.70.

MATHEMATICS

Anderegg, Frederick, and Roe, Edward Drake. Trigonometry. Boston: Ginn & Co. Pp. ix+108. $0.75.

Burket, Charles William, and Swartzel, Karl Dale. Farm Arithmetic. New York: Orange Judd Co., 1913. Pp. xvii+280.

Byrnes, James C., Richman, Julia, and Roberts, John S. Pupils' Arithmetic. New York: Macmillan, 1913. Pp. viii+432. $0.50.

Collins, Joseph V. Advanced Algebra. American Book Co., 1913. Pp. x+342.

Fite, William B. First Course in Algebra. D. C. Heath & Co., 1913. Pp. vii+285.

Ford, Walter Burton, and Ammerman, Charles. Plane Geometry. New York: Macmillan, 1913. Pp. ix+213+xxxi. $0.80.

Long, Edith, and Brenke, W. C. Algebra, First Course. New York: Century Co., 1913. Pp. vi+283. $1.10.

Van Tuyl, George H. Essentials of Business Arithmetic. American Book Co., 1913. Pp. 272+xvii. $0.70.

ENGLISH

Bleyer, Willard G. Newspaper Printing and Editing. Boston: Houghton Mifflin Co. Pp. ix+365. $1.65.

Halleck, Reuben P. English Literature. American Book Co., 1913. Pp. xi+647. $1.30.

Macaulay's Speeches on Copyright and Lincoln's Address at Cooper Union. Edited by Edwin L. Miller. Cambridge, Mass.: Riverside Press, 1913. Pp. viii+118. $0.25.

Manly, John Mathews, and Powell, John Arthur. A Manual for Writers. Chicago: The University of Chicago Press, 1913. Pp. vii+225. $1.25.

News of the Press. Literary Selections from Newman. New York: Longmans, Green & Co. Pp. xv+210. $0.60.

MISCELLANEOUS

Baily, L. H. Botany for Secondary Schools. New York: Macmillan, 1913. Pp. xiv+465. $1.25.

Barass, John E. Writing Latin, Book Two. D. C. Heath & Co., 1913. Pp. viii+160. $0.75.

Bexel, J. A., and Nichols, F. G. Principles of Book Keeping and Farm Accounts. American Book Co., 1913. Pp. 180. $0.65.

Bice, Hiram H. Sight Reading. New York: Ginn & Co., 1913. Pp. xii+159. $0.50.

Buxton, George Fred, and Curran, Fred L. Paper and Cardboard Construction. Peoria, Ill.: Manual Arts Press, 1913. Pp. 191. $1.50.

Fletcher, Robert H. Shakespeare Glossary, Grammar, etc., 1913. Pp. 90. $0.30.

Fletcher, Robert H. Tennyson and Browning. 1913. Pp. 258. $1.00.

Harding, Samuel B. New Mediaeval and Modern History. American Book Co., 1913. Pp. xvi+752. $1.50.

Lockwood, Francis C. The Freshman and His College. D. C. Heath & Co., 1913. Pp. vi+156.

Mayne, D. D. Business Spelling Book. New York: Longmans, Green & Co., 1913. Pp. vii+120. $0.30.

Thomas, Allen C. History of England. D. C. Heath & Co., 1913. Pp. vii+651. $1.50.

CURRENT EDUCATIONAL LITERATURE IN THE PERIODICALS[1]

IRENE WARREN
Librarian, School of Education, University of Chicago

Abbott, Helen L. The responsibility of the schoolroom. Educa. 34:27–30. (S. '13.)

Asterisk, John. The reorganization of the University of London. Educa. R. 46:109–34. (S. '13.)

Bell, Catherine F. Another experience with the Binet test. Train. School M. (N.J.) 10:77–78. (S. '13.)

Bennett, Charles A. Impression gained from a day's visit to the Mississippi Industrial Institute and College. Voca. Educa. 3:11–23. (S. '13.)

Bok, Edward. Is the college making good? Outl. 104:851–57. (16 Ag. '13.)

Brown, Marion Frances. The creed of an American schoolboy. Educa. 34:45. (S. '13.)

Cholmeley, R. F. Secondary education: the next step towards a national system. Educa. T. 66:375–78. (S. '13.)

Church, H. O. The use of scientific material in the high-school course in English. School R. 21:461–66. (S. '13.)

Claus, Henry T. The problem of college chapel. Educa. R. 46:177–87. (S. '13.)

Colby, Elbridge. Value of the college fraternity. Educa. R. 46:157–67. (S. '13.)

Cooley, Edwin G. Professor Dewey's criticism of the Chicago Commercial Club and its Vocational Education Bill. Voca. Educa. 3:24–29. (S. '13.)

Crawshaw, F. D. College entrance and advanced credits for manual arts. School R. 21:467–74. (S. '13.)

Dorey, J. Milnor. Public speaking and dramatics in high schools. Educa. 34:31–38. (S. '13.)

Education that educates. Outl. 104:845–46. (16 Ag. '13.)

Eikenberry, W. L. First-year science in Illinois high schools. School R. 21:542–48. (O. '13.)

Gathany, J. Madison. Teaching practical politics in our schools. Educa. 34:20–26. (S. '13.)

Goldfarb, A. J. The teaching of college biology. Science 38:430–36. (26 S. '13.)

Grupe, Mary A. A review of the pedagogical studies in the teaching of spelling. Educa. 34:1–19. (S. '13.)

Hargitt, Charles W. A problem in educational eugenics. Pop. Sci. Mo. 83:355–67. (O. '13.)

[1] *Abbreviations.*—Educa., Education; Educa. R., Educational Review; Educa. T., Educational Times; J. of Educa. Psychol., Journal of Educational Psychology; Lit. D., Literary Digest; Outl., Outlook; Pop. Sci. Mo., Popular Science Monthly; School R., School Review; Train. School M. (N.J.), Training School Magazine (New Jersey); Voca. Educa., Vocational Education.

Hollingworth, H. L. Correlation of abilities as affected by practice. J. of Educa. Psychol. 4:405–14. (S. '13.)
Host, Arthur G. First-year work in modern languages. School R. 21:549–59. (O. '13.)
Irwin, Elizabeth A. A study of the feeble-minded in a west side school in New York City. Train. School M. (N.J.) 10:65–76. (S. '13.)
Is the college making good? Outl. 104:991–95. (30 Ag. '13.)
Jessup, Walter A. The shifting school population. School R. 21:513–22. (O. '13.)
Judson, Harry Pratt. Economy in education. School R. 21:441–45. (S. '13.)
Kenwood, Sydney H. The real problem in education. Educa. T. 66:379–80. (S. '13.)
Library theory and practice. Dial 55:131–33. (1 S. '13.)
Lyttleton, Edward. Instruction in matters of sex. Educa. R. 46:135–42. (S. '13.)
McVey, Frank L. The matter of college entrance requirements. Pop. Sci. Mo. 83:286–93. (S. '13.)
Manny, Frank A. Bibliography of sex hygiene. Educa. R. 46:168–76. (S. '13.)
Misused mathematics. Lit. D. 47:467. (20 S. '13.)
Moore, E. C. Indispensable requirements in city school administration. Educa. R. 46:143–56. (S. '13.)
(The) next college president; by a near professor. Pop. Sci. Mo. 83:265–85. (S. '13.)
Potter, George M. Relative efficiency of public and private secondary institutions. School R. 21:523–37. (O. '13.)
Reavis, W. C. An experiment in the teaching of high-school composition. School R. 21:538–41. (O. '13.)
Redfield, William C. A plea for practical education: excerpts from recent addresses. Voca. Educa. 3:1–10. (S. '13.)
Rust, Annie Coolidge. Economy in the kindergarten. Educa. 34:46–49. (S. '13.)
Sachs, Felix. Preliminary study of the relative efficiency of inductive and deductive teaching of logical reasoning. J. of Educa. Psychol. 4:381–92. (S. '13.)
Shideler, Samuel Ervin. Qualifications, salary, and tenure of the teachers in the commissioned high schools of Indiana. School R. 21:446–60. (S. '13.)
Short, R. L. The institutional high school and what it does for the community. School R. 21:475–77. (S. '13.)
Starch, Daniel. Correlations among abilities in school studies. J. of Educa. Psychol. 4:415–18. (S. '13.)
Stearns, Wallace N. What does it cost to build a college? Educa. 34:39–42. (S. '13.)
Stratton, George Frederic. The man behind the child. Outl. 105:137–40. (20 S. '13.)
Strong, Edward K., Jr. Psychological methods as applied to advertising. J. of Educa. Psychol. 4:393–404. (S. '13.)
Vocational Bible-schools. Lit. D. 47:475. (20 S. '13.)
Wallace, J. A. A plan for outside reading. School R. 21:478–85. (S. '13.)